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ORIGINAL ARTICLES.

ELECTROLYSIS IN THE TREATMENT OF STRICTURE OF THE RECTUM.

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In 1882, I published a few cases of stricture of the rectum treated by electrolysis; some had complications.[1] Previous treatment by other means in some of these cases, one even by proctotomy, had given no lasting benefit to the patients. Electrolysis finally cured the stricture; and in one case the permanent cure was demonstrated by the post-mortem specimen, presented to the New York Pathological Society—the patient meanwhile having died from some other disease.

This latter case was treated in 1871, and I believe was the first application of electrolysis in the treatment of rectal stricture. Recently some successful operations have been reported here as well as in London, and that induces me to give a detailed statement of my unpublished cases, in connection with the old report, including what other operators have done.

History of the Operation.[2]—In 1871 the author first used electrolysis in stricture of the rectum. In 1872 Dr. Beard applied only external galvanism, and in the same case he and Dr. A. B. Crosby electrolyzed scirrhus of the rectum with strong currents through needles inserted in the tumor.[3]

In 1873, Dr. Groh of Olmütz used electrolysis in cancer of the rectum, also with needles. The patient was temporarily improved, the fetid odor and pain disappeared after the first application.[4]

In 1875, Dr. Lente applied galvanism, but as he does not state in what manner, it probably was external galvanism; later the patient was operated upon with the knife.[5] It will be seen that no other operator antedates the cases of 1871, but later different operations with needles, strong currents, and for complication of cancer were done—therefore I believe I am justified in claiming priority in the treatment of rectal stricture by electrolysis.

The plan of treatment followed out in my cases is almost identical with my method of treating urethral strictures by electrolysis. The success achieved in the latter was my inducement to apply the method practically in stricture of the rectum, which was based on the same theory, namely:

Electrolysis is the process of decomposing a compound body by electricity, producing a galvanic chemical absorption of the stricture. This theory is not new and was established eighty-nine years ago by Nicholson, confirmed later by Faraday, and can be found in all text-books on elementary physics and chemistry. Among the recent literature on this subject I am pleased to mention a valuable article of Dr. George H. Rohé, of Baltimore, "The Electrolytic Decomposition of Organic Tissues,"[6] in which the author defines the theory of electrolysis, and explains the action in a very clear and admirable way, introducing all the new nomenclature as adopted by the International Electric Congress in Paris. These theories have been widely accepted, and at the present time our gynecologists, with very few exceptions, practice the absorption of indurated tissues with almost uniform success. Under such circumstances, it is astonishing that some surgeons who call themselves eminent, still persist in an unwarrantable denial of the power of electrolysis, against all theory and practice, as shown by reliable statistical reports, supported by documentary evidence and witnesses.

Instruments.—The treatment applied is virtually the same as in strictures of the urethra. The armamentarium consists of a good galvanic battery with conducting cords, handles, with sponge electrodes, a few binding screws, a set of rectal electrodes of different size and shape, and a milliampère meter to measure the electric current. The electrodes have at one end a metal bulb, copper or brass, silver-plated or nickled is best. The form is flat or round, the latter more egg-shaped; they are made in sets of different sizes; the length is from ¼ inch to 1¼ inch, and the circumference from 1⅛ to 3 inches.

The stem of the electrode, except at the ex-

[1] See New England Medical Monthly, September, 1882.
[2] Ibid.
[3] Arch. Elect. and Neur., N. Y., 1874, i, p. 98.
[4] London Med. Record, March 5, 1873.
[5] Hayes' Jour. of the Amer. Med. Sciences, January, 1875.
[6] New York Medical Journal, December 1, 1888.

tremities, is insulated with hard or soft rubber—some are flexible, others stiff. If larger sizes are needed, I use a metallic bulb, similar in shape and size to a vaginal electrode, which are from 3 to 5 inches in circumference.

Modus Operandi.—The patient may be placed in the Sims position on the left side, but in the majority of cases the lithotomy position on the back is preferable, because in the examination and operation the anatomical relations of rectum and colon with the sigmoid flexure can be better appreciated. The galvanic battery is brought into action with the switch at zero. The sponge electrode, wet with warm water and connected with the positive pole of the battery, is placed firmly in the palm of the patient's hand, but in some cases may be pressed on the abdomen. The negative metal electrode is lubricated with glycerine and inserted *per anum* to the seat of the stricture, and only then the electric current is slowly increased from zero, cell by cell, till the desired strength is reached, which is ascertained mostly by the sensation of the patient. The strength of the current allowable varies from 5 to 15 or even 20 milliampères, according to the seat of stricture, the nature of the neoplasm, the size of the electrode and the susceptibility of the patient; the rule always being not to use a strong current, if a weak one will accomplish the object. The séance may last from five to fifteen minutes. No force should be used, the electrode should be kept steadily against the stricture, and only guided; the electrolysis does the work of enlarging the calibre, and then the instrument passes the obstruction. At the end of the séance, the current is reduced slowly cell by cell to zero; and not until then is the electrode to be removed.

It will be perceived that the occasionally stronger current in this operation is the only difference from the treatment of urethral strictures. Séances may be repeated in one or two weeks. According to circumstances and complications of the disease some modifications of the treatment may be called for, one of which is the use of needles in the mass of the stricture, instead of the metal bulb, at the negative pole. My smaller electrodes are very flexible and long, the object being that undue force is impossible while being used. The instrument also will accommodate itself to the flexure and easily enter the colon; thereby increasing the field of observation.

Case 1.—Stricture of Rectum—Rectal Fistulæ—Failure by Gradual Dilatation—Success by Electrolysis.—March, 1871. Mary V., æt. 24 years, of a robust constitution and healthy appearance; had her first catamenia when 14 years old. Was regular until she became *enciente*, had a child five and a half years ago, when 18 years old. She believes she had a miscarriage, at eight or ten weeks, some time afterwards; then menstruated regularly until one and a half years ago. Without any appreciable cause had amenorrhœa eight months, then menstruated regularly twice, and again a second term of eight months the catamenia were absent. For this amenorrhœa she had no treatment. She complains now of constipation and pain in defecation, has a burning sensation in rectum, headaches and dyspeptic symptoms. The patient was reckless, addicted to intoxicating liquors, and led a very irregular life.

On examination a stricture in rectum is found 2½ inches above the anus. The point of the index finger cannot pass, but enters the stricture, is there arrested, and encounters a very hard, fibrous mass.

The tissues around are indurated, almost simulating the first stage of scirrhus. Dr. Erskine Mason examined the patient with me, and concurred in the diagnosis.

There is no doubt about the diagnosis; the only question is the cause of this trouble. The patient is candid about her history and previous life, hides nothing, and has no object to do otherwise. She positively denies having had syphilis, or any secondary manifestations; never had sexual connection in rectum. For the last six years or longer, I have seen this patient at various times, and any syphylitic appearances would not have escaped my notice. But I am positive that I treated her two years ago for chancroids and condylomata. I recollect that she was careless in attending to the dressing and cleanliness. And this is probably the cause of her stricture. Besides, I do not believe much in syphilitic strictures, except when inoculated by actual contact, and am supported in this opinion by such eminent authorities as Holmes, Coot, Lancereaux, and particularly Mr. Gosselin, who first pointed out the true pathology in "Des Rétrécíssements Syphilitiques du Rectum," *Arch. Gén. de Méd.*, 5th Serie, p. 667.

The shortest and best description of this cause of such a stricture is given by Bumstead in his valuable work,[7] which I cannot resist the desire to quote here: "Chancroids situated near the margin of the anus may give rise to a form of stricture of the rectum, which has improperly been called syphilitic."

Treatment was commenced by gradual dilatation with rectal bougies. Not the slightest improvement was made with this procedure. The patient complained that the bougies gave too much pain, and hurt her so much that after the third time of their introduction, she refused the further continuance of this kind of treatment. She disappeared from my observation for some time, and after an elapse of six months, came back again in a deplorable condition.

October 1, 1871. Her health was now much impaired, and she suffered a great deal. The stricture would not admit of her having a regular

[7] Bumstead on Venereal Diseases, p. 363.

passage from the bowels, which were always constipated, and admitted only once in a while a watery evacuation. She had pain in the gastric region, the abdomen was swollen, the intestines full of gas, and there were constant tenesmus and troublesome eructations. As soon as she had partaken of a meal, vomiting followed. She had excruciating pain in rectum and anus—in fact, almost everywhere, and was much reduced in flesh and very anæmic, presenting a picture of distress and agony.

On examination, I found the rectal stricture worse and smaller than before. By forcibly pushing the finger, its point entered the stricture a little, and there was arrested. Five rectal fistulæ, with small openings in the gluteal muscles, wound their way in tortuous sinuses, burrowing through different tissues. Purulent and bloody discharges from these sinuses dribbled down her limbs, and sometimes, before breaking externally, became sacculated and increased the pain. The patient felt so miserable that she accepted any proposition of operative procedure.

October 3. Bowels were emptied by a purgative and injection. In the evening a dose of Magendie's solution was given.

October 4. The operation (by electrolysis) took place at my office. The patient was very weak, could scarcely walk, and came to my office in a street-car, assisted by a lady friend. She suffered much pain, and could not permit any manipulation, therefore ether was given her. First, the sphincter ani was stretched, then a leaden ball on the end of an electrode was introcuced to the seat of the stricture. Above the leaden ball the metal was insulated by a flexible rubber covering. The end of the wire was attached to the negative pole of a Stoehrer 16-cell battery. The circuit was completed by a sponge electrode as the positive pole, attached firmly on the gluteal muscles. All 16 cells were brought in operation for twelve minutes, after which the stricture was considerably dilated, and some of the fibrous mass absorbed. It was not expected that one séance should cure the stricture, and the intention was to repeat the electrolysis in about five or six weeks. However, the sequel will show that no opportunity was given for a second application, and nevertheless the stricture was cured. This proves that an absorption goes on for some time after the real active electrolysis has ceased. A dose of Magendie's solution was given subcutaneously, and the patient went home in a car.

October 5. She feels nauseated from the ether and has some pain. I order suppositories of belladonna.

October 7. Patient feels more cheerful and has no pain.

October 10. Walks about the house, feels pretty well, and has no pain, On digital examination the stricture has almost disappeared, and the rectum feels more normal than before. Nothing was done for the cure of the fistulæ.

From this time the patient felt so well that she refused any further treatment, and even an examination. I have seen her off and on. Sometimes she felt worse, but at other times enjoyed excellent health. The stricture did not trouble her any more, and even her bowels were pretty regular and normal. Then she disappeared from my observation altogether, and only by chance during the following year I came to her death-bed.

April 9, 1872. As I was passing a house on —— street, a lady called to me from a window and, telling me that my former patient was very ill in bed, asked me to come in. Since I last saw her she had become very dissipated, had recently been on a spree, been exposed to cold, and was at that time very weak and in bed with a high fever. I found her suffering from acute peritonitis; constant vomiting of greenish matter, watery discharges from the bowels; abdomen swollen and very tender to the touch; pain, restlessness, high pulse, fever, thirst and great anxiety were the symptoms. It was evident that she could not recover, and the next morning (April 10, 1872), she died.

Autopsy was made on the same day. Rigor mortis very marked. The whole abdominal cavity was filled with thick serum and lymph of a yellow color. All the viscera in the abdominal cavity were covered with a thin layer of freshly effused lymph—parietal peritoneum free. The disease was of so recent a date that no adhesions had formed. The posterior wall of the rectum was firmly adherent to the sacrum. There were condylomata in vagina and around anus and mucous patches in lower end of rectum. The rectum and intestines were free from hardened or accumulated fæces; no scybalæ were found.

Dr. Terry kindly assisted me at the post-mortem, and immediately after made a microscopical examination of the rectum. He reports that the microscope shows no heterologous tissue, and nothing strictly neoplastic.

The specimen was presented to the Pathological Society on the same evening, and showed that the stricture had not troubled the patient, that it had not grown worse since the operation, but, on the contrary, had improved.

The report of this case is complete, and shows the perfect success of electrolysis. It was a very bad case, the patient's loose habits and neglect counteracting all benefits of treatment. No fair play was given to the method, as after the first operation, any further necessary treatment was not permitted. The case was complicated by fistulæ. The patient died nearly seven months after the operation from acute peritonitis after a debauch, and not from the disease under consideration. The specimen showed under all these adverse circumstances a decided improvement, which

cannot be called anything but a decided success.

Case 2.—Mrs. D., æt. 62 years, May, 1875, complains of a twisting and pain in rectum. Has headaches and habitual constipation.

Digital examination. After the finger has passed the sphincter ani, it enters a large cavity, which appears to be a cul-de-sac, without any opening, but on further exploration about 4 inches higher up, to the left, a stricture of the rectum is found. This continuation of the rectum is a closure—a sphincter-like constriction, which is so much contracted that the point of the forefinger cannot penetrate it. The cavity is filled with hardened fæces.

May 7 to 12. Four days were spent in the gradual removal of the fæces from the large cavity of the rectum by injections; and afterward by the use of a long flexible rectal tube, through which lubricating injections were pushed by hydraulic pressure.

May 13. Dr. Frank, of Pittsburg, examined the patient with me, and found the stricture just as firm as described above. Electrolysis was used. The positive sponge electrode was held in the palm by the patient. The negative pole was a bougie, on the end of which was a flat metal piece, a little smaller at the end, three-eighths of an inch in width, the middle part of the instrument measuring five-eighths of an inch.

This bougie was introduced into the rectum and pushed against the stricture. Then the galvanism was used for ten minutes, with ten cells of a new Chester battery. The metal of the bougie became engaged in the stricture, and gaining slowly, finally passed through it. After this electrolytic application, the stricture felt softer, the finger could enter it, and this part of the bowel could be pulled down.

May 21. There is a decided improvement. The stricture is softer and wider; the flexible rectal tube passes it, and is gradually forced up the colon till its point is eighteen inches up from the anus. While it is gradually pushed upwards, the lubricating injections are continued to remove the impacted, hardened fæces.

May 23. The fæces appear to be all removed, the bowels move now, although not quite regular.

May 28. Electrolysis was repeated in the same manner as that of last week; the same instrument passed the stricture, then was detached from the battery and left inside, and above the stricture in the rectum.

Then the same operation was repeated with a round bulb five-eighths inch in diameter, which also passed the stricture; next, the first metal was withdrawn and brought alongside of the second. The diameter of both together was now one inch.

This dilated the stricture a great deal, and to a larger size than a large bougie would have done. To-day she had no pain, no anxiety, and was cheerful.

June 4. Electrolysis as before. Negative, a large metal bougie three fourths inch in diameter. As soon as the instrument was withdrawn the stricture felt as if contracted in folds, exactly like the sphincter ani.

June 15. Electrolysis with bougie one inch in diameter; it passed the stricture in its whole length. Nine cells were used for twelve minutes. The application did good, and the patient remarked that it imparted a welcome warmth to the whole alimentary canal, and even to the abdomen, where formerly she always complained of a chilly sensation.

June 25. Galvanic application. The bougie went into rectum easily ten inches up.

No other cause for this stricture could be found than the atony of old age in consequence of constipation, and impacted fæces, which made below a pouch, and by constantly pulling downwards elongated, and lastly paralyzed some fibres. Above this atonic part the contraction acted stronger and stronger, overpowering the parts below; spasmodic action followed, the mucous membrane became divided in folds, which again contracted until a firm stricture, almost a closure, was created.

Case 3.—Mrs. P., æt. 30 years, married, has a stricture of the rectum of five years' standing; was sent to me by Dr. Bosworth, who had given this case a great deal of attention, and had relieved and benefited the patient much. The treatment consisted of a gradual dilatation, forcible dilatation, division of the stricture by the knife, constitutional remedies, all according to the most approved methods of the best authorities and with the same result: the patient was relieved for the time, but soon the stricture contracted again.

The patient's history is syphilis, uterine disease, pelvic cellulitis, in consequence of which the uterus is retroflexed with fixed posterior adhesions, which also have caused a periproctitis, and leave large indurated masses in the areolar tissues in and around rectum, and in recto-vaginal septum. And now, in addition to all these troubles, which have undermined her constitution, comes the stricture for consideration. It is near and above the anus, one and a half inches high, is equally divided around the rectum in a circular manner, involving all parts of the wall alike; is very fibrous, and extends in length about one and a half to two inches. There is considerable hardness and induration, and the tip of the finger cannot pass through the stricture.

May 13, 1876. Mild application of electrolysis by galvanic battery (Chester), ten cells for ten minutes. As negative pole in rectum there was used a vaginal metal electrode two and a quarter inches in circumference, which finally passed the stricture.

May 19. Electrolysis; positive sponge in

hand; negative pole in rectum was a rectal tube, conical, silver-plated metal.

Fourteen weak cells were used for twenty minutes. The negative pole advanced very gradually, and at last passed through stricture to a point measuring three inches in circumference and three-quarters of an inch in diameter. Most of the hard fibrous mass had disappeared, when digital examination was made. The annular edges of the stricture could still be felt, but it was smaller, soft, dilatable, yielding in great contrast to the former, hard, unyielding, brittle, fibrous tissue. This séance had done a great deal of good, had absorbed much of the fibrous tissue, to overcome which is the most important part in this case.

June 2. The hard, fibrous tissue is still there, and obstructs the action of the peristaltic motion. Electrolysis as on former occasion, twenty cells, weak solution, for fifteen minutes. The largest rectal bougie passed through stricture in its full length.

June 9. Electrolysis, with twenty-five cells for fifteen minutes, may appear a strong current, for an electrolytic action, when I generally advocate mild currents. However, it acted mildly in our case, and as an explanation, the following is offered: The cells of the battery were small, not filled entirely, and the fluid was very weak from long use. Milliampère meters were not in existence at that time, which explains, that the current-strength is not stated. The rectal bougie used has a large surface by which the force of the current was broken and divided over all parts in contact alike, whereas in other bougies used for strictures the power is concentrated at one point, working against and on one unyielding structure of the part. Now we had not a distinct stricture, not a round annular formation of membrane or ring, but indurated isles in portions of rectum.

June 16. Electrolysis; twenty cells for twenty minutes. The current was not strong and did not hurt; softening of fibrous mass was very limited.

July 28. The fibrous mass is extending all around and high up in rectum; by digital touch it feels suspicious. Progress is not as good as desired, but nevertheless the hard mass has softened and diminished. Another method is now used, viz.: By needles as negative pole, as in the absorption of tumors. One platinum needle is guided by the finger, and pushed into a fibrous band or in a mass of hardened tissue. In one instant the needle is pushed deep into the fibrous band forming the stricture, the circuit is closed by the positive sponge in the hand of the patient. The electrolysis works the needle out towards the rectal cavity by slowly dividing the real mass of the stricture. An advance for the better has been made; patient feels very well: the whole constitution is improved, but the hard mass is large, and high up in the rectum, which needs many applications, as in scirrhus.

August 18. Patient reports much improved, and is better in every way. The rectum has lost the feeling of fibrous bands and hardened tissue; the large bougie enters easily its full length and size.

January 27. Patient reports after an absence of five months, during which time she has not had any treatment. Some indurations, the remains of her pelvic cellulitis, are still present, but the real stricture is cured. Her general health is improved, and she enjoys life now. The patient has been heard from for years afterwards; during which time she has remained well. At the present time, May, 1889, she could not be found.

Case 4. (*No. 2478*).—Mrs. Marg. O., æt. 38 years; widow, was married seventeen years ago, had six children; had been suffering with constipation and hæmorrhoids. Was operated upon by Dr. Swinburne, in Albany. At present complains of pain at defecation, never has a normal stool, always has discharge from anus of matter, pus and sometimes blood.

July 28, 1880. On examination found a stricture two and one-half inches from anus, not very hard, excluding by the touch scirrhus, the stricture was not equally round but irregular in formation, the little finger could engage in it, but would not pass through it.

July 31. Electrolysis. A sponge electrode as the positive pole was held against the abdomen; a firm electrode with a round metal ball two inches in circumference, connected with the negative pole of a galvanic battery, and introduced into the rectum, pressing against the stricture; a current of ten cells was used for fifteen minutes, which enlarged the stricture to such an extent, that the electrode and index finger together passed the stricture.

August 7. Electrolysis was repeated, the negative electrode, a vaginal bulb, was used, which did good service in absorbing the indurated masses in rectum. After ten minutes the electrode had advanced six inches in rectum.

August 18. Patient is now much improved, stools are better, and at times almost normal. The stricture is wider, and the walls of rectum are less indurated. Ordered a tonic.

August 25. Electrolysis as before, the stricture thereby was enlarged to three inches circumference.

September 15. Is improved. Different sizes of rectal bougies passed all alike, seven inches from the anus up the rectum.

September 21. Electrolysis as before, with a weak current for six minutes, which further enlarged the stricture. Discharge of pus, serum and blood was still present.

September 24. Electrolysis with negative

electrode three and one-fourth inches in circumference. There were indurated masses in rectum, hard all around, and extending above stricture.

October 17. Is much improved, in fact, patient considers herself well, having no pains, and bowels acting normally and regularly. Electrolysis with a negative bulb of four inches circumference, passed well through stricture.

October 28. More improved. Large vaginal bulb, four inches circumference, passed easily up the rectum, the walls of the rectum appear normal, all hardness has disappeared.

November. Patient reports well, and is going back to Albany.

Case 5. (*No. 2545*).—*Four rectal strictures, Recto-vaginal fistula, Syphilis.*—Mrs. M. A. C., æt. 36 years, been married eighteen years, has had four children, the youngest is 4 years of age. She had one miscarriage before first child was born. Menstruation has been regular until last month, when owing to the patient's illness it did not appear.

History.—First symptoms of present trouble was noticed five years ago. Previous to that time, bowels were usually regular. Patient states that at first there was a bearing down pain, with a desire to go to stool without being able to accomplish anything. This gradually increased until it would sometimes be three weeks before she had a natural passage. The trouble was first attributed to hæmorrhoids. About this time patient was examined by Dr. Lockwood, who discovered the stricture, and operated twice by dilatation with rectal bougies.

The patient states that the last operation was painful, therefore she did not return for treatment. The dilatation afforded temporary relief.

During the long interval that followed the history is imperfect. There is evidence that no improvement took place. Patient says that her bowels were very irregular, constipation followed by diarrhœa. Health failed. July, 1882, she again applied to Dr. Lockwood. The patient has been sick in bed for some time, emaciated and too weak to stand up. The stricture is so small, that no bougie will pass, and her passages are imperfect. Dr. Lockwood used dilatation with small rectal bougies, which benefited considerably, so that her fæces assumed again a shape, even if it was only as thin as a small little finger. The rectal bougie would not pass farther on, than near six inches from anus.

August 23, 1882. My friend Dr. Lockwood requested me to see his patient in consultation, with the intention of applying electrolysis. Upon inspection a large rounded tumor was seen situated at the verge, and external to the anus. It was soft, irreducible, but not painful to the touch.

The situation and size interfered with the internal examination, but as it caused no inconvenience to the parts it was allowed to remain. Digital examination of the rectum caused excruciating pain. Two inches from the anus the first stricture was found, which was a firm annular ring, in which the tip of the finger engaged, but could not pass through. From the anus and near the stricture on the anterior wall of the rectum are indurated isles painful on pressure.

Examination with rectal speculum revealed several herds of deep ulcerations, which were very painful. A bloody discharge mixed with pus oozes from the parts. In consequence of the long existence of the stricture, and the induration of the tissues resulting from it, there is a recto-vaginal fistula through which fæcal matter is often carried into the vagina. A small rectal bougie passes through the stricture and its conical end, dilates it to a limited extent, but is arrested in its progress by another stricture at three inches from the anus. There were altogether four strictures as follows:

First stricture at 2 inches from the anus; 2d at 3; 3d at 5¼; 4th from 10 to 11.

A solution of nitrate of silver was applied to the ulcers in rectum with marked benefit in stopping the hæmorrhage, and leaving the ulcers in a healthier condition. The general health of patient is bad, she is emaciated and weak from the constant irritation and pain caused by her disease.

August 28. The ulcerations look better; patient is too sensitive to be examined. The ulcerations were slightly touched with the solution of nitrate of silver. Rectal suppositories were ordered to relieve the pain. A tonic containing cinchona was also ordered.

September 1. Electrolysis was applied with the assistance of Dr. G. W. King. The patient was more comfortable, and her general appearance somewhat improved since last visit.

The parts about the anus were unchanged with the exception that the ulcers looked healthier and did not bleed so freely. Dr. King made a digital examination, and confirmed the diagnosis of a very tough, hard stricture, through which the tip of the finger could not be pushed.

Electrolysis was applied, the negative electrode introduced in the rectum had a metal bulb two and one-eighth inches in circumference; the circuit was closed by a positive pole as a sponge electrode held against the abdominal wall. Six cells of a galvanic battery (Drescher), was used, the current did not cause the slightest pain. Its action upon the stricture was prompt, no force was used, the instrument passed easily through the first stricture. It was left in position about twenty minutes, then gradually withdrawn for the current to come in contact with, allowing the time for the whole extent of indurated tissue.

The nitrate of silver solution was applied to the ulcerations.

September 3. The patient feels better to-day; gave injection of castile soap and warm water with fountain syringe. A large quantity of fæcal matter was passed causing considerable pain. Daily injections of warm water were ordered, at bed time an enema of olive oil to lubricate the parts.

September 6. Patient states that she had some hæmorrhage from the bowel after the injection. The ulcerations are healed, there is no discharge from the anus, the parts are less sensitive. A negative electrode was passed, and mild current, six cells being used. The instrument passed the first stricture and engaged in the second when it was firmly held.

This bougie was changed for one with smaller tip, and the current kept in contact with the stricture for some time, but slow progress was made. The whole operation lasted half an hour, no pain was felt from the current. The electrode passed up to five inches through two strictures, but no instrument would advance any farther.

September 8. A flexible electrode, No. 26, French, egg-shaped, short metallic bulb, as negative pole was introduced in the rectum, the positive sponge electrode held on the abdominal wall, with a current of seven cells. The electrode passed slowly in rectum up its whole length twelve and one-half inches, and encountered several strictures, particularly from ten to eleven inches. The ulcerations within the sphincter ani and above have healed and look healthy. The lower part of rectum is improved, but the indurations have not entirely disappeared. Patient looks improved, her countenance is more cheerful, she has not had any pain, the fæcal matter passes now in a more compact form, and of larger size. To-day no blood passed, not even a coloring.

September 12. Patient is remarkably improved in every way. Her face has filled up in flesh, she has better color, looks cheerful. She has had no pain, her bowels are more regular, and fæces have improved in form and compactness. The lower part of rectum from anus to five inches up, appears healthy, no pus nor hæmorrhage, ulcerations have healed, but there are still some indurations left. The first two strictures are enlarged, but besides the No. 26 French no instrument will pass up farther than six inches. Electrolysis was applied again when electrode No. 26 French passed up its whole length twelve and one-half inches.

September 15. Patient is much improved, has been out of bed a whole day and walked about the room. Bowels are in a better condition, in fact, move almost normally. No pain. All instruments are arrested at five inches, but flexible bougie, No. 26, French size, passed again up to twelve and one-half inches. Next two bougies were inserted at once, in the following manner: Flexible No. 26, French, ahead, and a second instrument of the size No. 30, French, behind, so that the larger egg-shaped bulb was behind and in close proximity, almost as a continuity of the smaller bulb, No. 26. Electrolysis was then applied, and after twenty minutes the smaller instrument slipped through the stricture, followed immediately by the larger one. Then the smaller was left *in situ* while the larger No. 30, advanced, and passed up its whole length, thirteen inches through all strictures. The instrument could be felt distinctly through the parietal walls of the abdomen, and traced in its whole length up the descending colon. On withdrawal of No. 30, it was brought alongside of No. 26, and in this united form passed through the strictures. The whole séance lasted thirty minutes, without hurting the patient, or causing any hæmorrhage.

September 26. Rectal bougie, flexible, bulb, one and one-fourth inches in circumference, passed through all strictures thirteen inches up where it was left, while a second instrument two inches in circumference was introduced with electrolysis of eight cells, and also passed all strictures up to twelve and one-half inches. Patient felt both instruments distinctly in her bowel, and commented on the difference of the sensation, comparing it with the former introduction.

On September 15, the passage of the bougie, No. 26, through the upper stricture was painful like a ball of fire, which burned through the small aperture, and then fell into a large cavity. However, to-day both bulbs slipped through easily without any pain or soreness. Galvanism was given to the lower part of the rectum with a vaginal electrode two and one-fourth inches in circumference and three inches long for ten minutes. There are scarcely any indurations left, the rectum feels almost healthy, no pain; bowels are almost normal, general health is improving constantly.

October 3. Electrolysis in the usual manner, negative bulb in rectum, with a current of seven cells for fifteen minutes.

October 7. Solution of nitrate of silver applied to ulcer in rectum.

October 14. Stricture is still hard to the touch. Electrolysis repeated with metal bulb, particularly to five inches from anus, with a weak current of five cells for twenty minutes. Patient was sensitive to the current, otherwise is constantly improving, is gaining flesh, and walks about the room almost the whole day.

October 18. Electrolysis with two flexible bougies, metal ball at the end, both instruments passed upwards thirteen inches without any difficulty. In returning the instrument downward, the electrolysis did good service, and the absorption could be felt by transmission to the fingers and the ease with which the instruments passed.

Dr. Lockwood was present and prescribed iron and quinine.

November 8. The intermission has done harm, there is more hardness in rectum like a relapse. It seems the intermission since last application of electrolysis has been too long.

November 14. Electrolysis with metal bulb as negative in rectum particularly to stricture at 5 inches, current of 8 cells for 12 minutes. Dr. Lockwood was present, after the séance examined the patient and found marked improvement.

November 18. Electrolysis with large bulb, which passed upwards in colon its whole length, 13 inches. After the current had been applied for 25 minutes, the electrode moved about with the greatest ease. The fistula has taken care of itself and is now healed up entirely. Strictures and indurated walls of rectum have improved remarkably. Bowels move now regularly every day. Ordered bichloride in small doses, as it is certain that she had contracted syphilis from her husband.

November 24. More marked improvement. Bougie passes easily without any difficulty. Digital examination does not hurt, the hardness has almost disappeared. Patient is in good condition. Dr. Lockwood present.

December 19. Patient came to my office much improved. Electrolysis, metallic bulb 3 inches in circumference as negative passed easily through all strictures, 10 cells for 25 minutes.

A prolonged illness held me in bed, and after recovery could not find the patient. I never could get any reliable information about her, and therefore cannot say she was cured; but she certainly was much improved when seen last. Dr. Lockwood coincides with the above, and has no trace of his former patient.

Case 6 (No. 2567)—Three Strictures—Improvement.—1882. Mrs. S. S., æt, 35 years, married 16 years, had four children, the last four years ago. Twelve years ago was so constipated, that sometimes her bowels moved only once in eight or nine days, there was very troublesome meteorism with pain. Ten years ago was treated by an excellent surgeon for stricture of the rectum by dilatation, with only temporary benefit. Next was operated on with the knife at the German Hospital. The stricture closed up again so that a second operation was performed five years ago at the St. Francis Hospital. For the last five years has taken only medicines, mostly large doses of cathartics, but her constipation remained and she got constantly worse. At present she can scarcely pass anything per rectum; any fæces which are evacuated are thin and flat ribbon like, but as a rule only watery diarrhœal discharges run involuntarily which were mixed with blood and pus. She is in constant pain.

December 13, 1882. Examination: Found a tight stricture by digital examination 1⅜ inches from anus, which would permit the passage of a bougie equal to a No. 17 French urethral sound. No larger instrument could pass the stricture. Two more strictures above the first were found, so that we have three strictures as follows: 1st. Stricture at 1⅜ inches from anus; 2nd. Stricture at 3 inches from anus; 3rd. Stricture at 5 inches from anus. Electrolysis was applied at once, with a bougie, having an acorn-shaped metallic bulb, equal to a No. 26 French urethral sound as the negative pole. This was introduced in rectum and held against the stricture, while the circuit was closed by the sponge electrode of the positive pole being held against the abdominal wall. A current from 6 cells absorbed in 20 minutes so much of the strictured tissue, that the bougie passed easily and also evidenced the other two strictures. Immediately a second electrode was introduced, size No. 28, French egg-shaped bulb, and this also passed all three strictures with a weak current. The stricture is very hard, unyielding, consisting of contracted cicatricial tissue, formed after the cutting operation. Tonic cathartic pills were ordered.

December 15. Electrolysis, negative metallic round ball 1¼ inches in circumference, 5 cells current for 20 minutes. At first no progress was made, but gradually absorption of the hardened mass took place, and then the bulb slipped through the stricture, and with more ease through the other two strictures.

December 19. Electrolysis, negative metal bulb 1½ inches in circumference for 25 minutes with a current of 7 cells. The cicatrix left from the former cutting is so hard, almost calcareous, that the task is very difficult to enlarge the calibre. The electrolytic power concentrated on the cicatrix absorbed slowly, and when the bulb had passed the stricture, the instrument could be moved about with ease. The second and third strictures are not so firm and yield easier to treatment, while the first stricture is not confined to a more contracted ring but has hard fibrous masses in the rectal wall extending to some distance around and above. The patient is much better, and has already regular evacuations of the bowels every day, the fæces being almost normal, have a conformity with the stricture.

December 23. Electrolysis. A bivalve speculum was used as the negative pole; 9 cells for 12 minutes enlarged the stricture to 2 inches circumference.

December 27. Electrolysis with a flat metal bulb as negative; a current of 10 cells for 20 minutes did better than at any previous séance, and absorbed much of the indurated tissue. After the séance the stricture was softer, there was less pain, and the last joint of the forefinger could be pushed through the stricture.

December 29. Electrolysis. Metal flat electrode, 9 cells for 20 minutes, caused more absorp-

tion, produced less irritation, no pain, no discharge and no bleeding.

January 12, 1883. Electrolysis caused more absorption without gaining on the calibre of the stricture.

January 24. Electrolysis under an anæsthetic. Dr. Meier administered ether. Positive large sponge electrode was held on abdomen, as negative a large platinum needle, spear-shaped at the end, was pierced in the lower margin of the annular ring of the stricture. A strong current of 20 cells was used, and the needle held in the direction, that it absorbed the tissue from the inside towards the free passage of rectum, thereby dividing that part of the stricture by electrolysis. Then electrolysis was applied with a metal bulb electrode 2⅛ inches in circumference, which passed easily through the strictures; after which a large metal bulb 3 inches in circumference could be introduced and passed up its whole length. The stricture is about one inch in length. The operation was done at my office, after which the patient went home, a distance of about three miles.

January 26. The patient is in good spirits, has not suffered any pain; uses rectal bougie. On digital examination found no stricture, the surrounding tissues softer, and the finger passed through a spacious calibre, without causing any pain. No anodyne has been taken.

January 29. Patient is doing very well. Wednesday she was operated on, Saturday she was dressed and walked about the room, and on Monday did the washing for the whole family of six persons, at the same time having a bougie in rectum for over an hour.

February 12. Electrolysis with metal bulb 3 inches in circumference, with a current of 10 cells for 20 minutes. No pain.

March 5. Endoscopic examination of rectum, some ulcerated spots were touched with iodoform. Ordered rectal suppositories.

March 8. Endoscope. Iodoform has done very well, rectum appears nearly healthy, there is scarcely any discharge. Bowels are almost normal. Ordered mist. biniodidi.

March 26. Electrolysis, with a metal bulb 3 inches in circumference.

March 28. Patient is improved in every way. Sphincter begins to be restored to an independent action. Endoscope shows healthy mucous lining and no ulceration, digital touch finds mucous membrane soft and normal General health is much improved. Bowels are regular.

August, an ulceration was found in rectum and treated per endoscope.

July 23, 1884. Nearly one year has elapsed, in which patient has not come for treatment. On examination a tight stricture is found in the upper part of the sphincter. Electrolysis for 10 minutes did some good.

July 30. Electrolysis repeated.

August, 1884. The case at present is unsatisfactory. While a year ago the improvement was steady and promised to result in a brilliant success; to-day a relapse has taken place. The tight stricture is found in a different situation, but nevertheless we have a stricture in which parts of the rectum are involved. Patient is in indigent circumstances, has to bring up four children, and has neither time nor room nor means to take care of herself. Therefore the question comes up if it would be better to have an operation performed in an hospital. Dr. J. D. Bryant kindly offered to take the patient in his ward of Bellevue Hospital. He proposed to operate by exsection of the stricture, then pulling down the healthy rectal tissue and stitching it to the lower part of the anus. This plan could not be carried out, because it was found at the operation that the thickened tissue of the stricture extended too high up; therefore the stricture was divided by the knife and excised as much as possible. The operation was performed in a masterly manner and has benefited the patient very much. Patient had to use a rectal bougie off and on, and thereby kept good health since the operation. I have seen her four years after the operation, she using still the rectal bougie faithfully. Later I heard from her husband that a relapse took place, complicated with a tumor, and that finally she died in October, 1888.

Case 7 (No. 2569). Mrs. R. B. A., æt. 43 years—married—sterile—normal menstruation, habitually costive, which is common in the family. Six years ago had prolapsus uteri. Three and a half years ago had membranous enteritis; after which the costiveness has been alternating with diarrhœal discharges. Has a steady pain, the seat of which corresponds with the junction of the transverse and the ascending colon. Sometime ago had muco-purulent and bloody discharges from bowels, which, however, have ceased of late. Always was inclined to be costive and suffers from dyspepsia, has flatus, bad taste with acidity; particularly in the morning. Gastralgia—without using an enema can not have a passage from the bowels.

December 25, 1882. Examination: Uterus is small flabby, body retroflexed and pressed against rectum. Rectal tube passes only up to 5 inches, where it is arrested. A small rectal bulb passes, but encounters strictures as follows: 1st. Stricture 5 to 6 inches from anus, followed by hard indurations; 2nd. Stricture at 10 inches, is in colon.

Electrolysis.—Positive sponge electrode in hand, negative metal round bulb electrode was introduced in rectum, and met the same obstruction as before. A current of 10 cells was used for 15 minutes. The bulb was held against the stricture and soon widened the calibre, so that another

electrode could be used, which passed upwards 13 inches, through all strictures. On withdrawal of the bulb, which was 2 inches in circumference, did more good work by absorption and came out very easily. Ordered enemata to be taken systematically and regular; galvanic external applications. The positive sponge in epigastrium, the negative sponge electrode to be moved slowly in the direction of the peristaltic action. Tonic cathartic pills, diet and Leube's beef solution, etc.

December 27. Electrolysis as before. Electrode passed easier, found the strictured parts less contracted, also less pain in colon. Current of 10 cells was used for 15 minutes. Electrode passed upwards 13 inches. Electrode was 2½ inches in circumference.

December 29. Electrolysis with a current of 8 cells for 10 minutes. Negative electrode 3 inches in circumference passed easily.

January 2, 1883. Patient is improved in every way, and has good movements of the bowels, Electrolysis, flexible round electrode as negative passed easily up to 13 inches; then a long round bulb 4 inches in circumference passed the stricture easily. Patient felt so well that she went home. Have heard from the patient later several times, that she has further improved, and remains well. The last time I heard from her was four years after the treatment.

Case 8 (*No. 2848*).—*Improvement.*—G. E. W., æt. 23 years, medical student. September 8, 1886, presented himself at my office saying he had a stricture of the rectum, which formed one year ago, after a severe attack of dysentery. He had seen many prominent professors, a cutting operation had been performed, and he is not better. A full history of the case will be given below in the patient's own words, as given in a letter sent to me by him for the purpose of adding to the notes of the case.

On examination the stricture was found to be 3½ inches up from the anus, the index finger just reaching the beginning of the stricture, which is annular, defined just like a new formation in a large cavity of the rectum; the walls very indurated, not yielding nor stretching. On further exploration with a bougie, the stricture is found to be one inch long and seems healthy above. Small papillæ on the under surface of the stricture can be felt distinctly

Electrolysis was applied, with a very weak current, for 5 minutes. Positive sponge electrode was applied over sacral region; the negative direct to the stricture was a flat metal, one inch long.

September 19. Electrolysis was repeated in the same manner as before for 12 minutes; the negative bulb was 1 inch long and 1½ inches in circumference.

September 26. Electrolysis. Negative pole had at its end a round metal bulb, 2 inches in circumference, which passed the stricture easily; 8 cells current was used for 15 minutes. The bulb around which the electricity is working was 1½ inches long, the other part of the electrode being insulated. The current was weak, did not hurt, there was only a warm sensation in rectum, a little stronger than at the positive pole. Patient had no inconvenience during or after the operation.

October 3. Electrolysis. Negative pole larger than used before, was a round metal ball 2¼ inches in circumference and ½ inch long, was held in stricture for 14 minutes. Very little improvement, papillomas are growing larger.

October 8. Electrolysis. As negative a large round metal bulb 3½ inches in circumference passed all inside and up the stricture; current of 10 cells for 16 minutes. There is an improvement. Drs. Kelsey and Sands individually examined the patient and also pronounced an improvement.

October 15. Electrolysis, in the same way as last time; the electrode passed easily through, and three inches above the stricture. Current was stronger, full power of 12 cells. The stricture is unquestionably better, but the papillomatous growth has increased.

October 22. Electrolysis. The electrode passes still easier but papilloma is worse.

October 29. Electrolysis as before for 15 minutes with a strong current.

November 7, 14, and 22. Three applications of electrolysis. In the last two applications as a negative pole a metallic dilator was used, with two blades, which were extended by degrees to 4¼ circumference. The current was 5 milliampères for 12 minutes.

November 30. The twelfth application of electrolysis was given; there is now a decided improvement; stricture is softer, more dilatable, while the margins are distinct, with indurated tissues surrounding it.

December 22. Electrolysis, as a negative a new electrode dilator was used, which had been made for the case, it was extended to 5 inches in circumference, current of 14 cells for 14 minutes, measured 6½ milliampères.

January 9, 1887. Electrolysis with the new dilator electrode extended to 4½ inches. Stricture is much improved, but the growth appears to increase.

January 16. Electrolysis repeated as before, but circuit of electricity applied with a larger resistance, positive electrode held in hand, new dilator as negative in rectum was an improvement. 7 milliampères for 15 minutes.

From January 24 till March 9. Six more séances were held in the same manner as before. There certainly was improvement of the strictures, it was softer in every respect, the indurations were softer, and an instrument of 4½ inches

circumference could pass the stricture and while *in situ* could be expanded to 5 inches. Patient could not stay longer in New York and went south to his home, promising to return soon for further treatment. However, for some reasons he never came back. He has written several times informing me of the state of his health. His last letter will explain best the history of the case, and I copy it here verbatim in his own language, as also several other letters about the case.

April 10, 1889.

DR. ROBERT NEWMAN.

My Dear Doctor:—I will recite for you with pleasure, as nearly as I can now recall them, the principal points n the history of my case. I am 25 years old and my family history is good in every respect, my father being a German and my mother an American woman. My own health has in the main always been good. I have suffered ill-health at times from rather severe attacks of intermittent fever, and went through the usual diseases of childhood. Have also suffered much, from 1882 to 1885, from nervous exhaustion, cerebral hyperæmia and well defined symptoms of lithæmia, none of which were treated properly until lately. I have never had any venereal disease, and beyond suffering much at different times from constipation, I have never had cause to suspect that my rectum was not in a thoroughly healthy condition.

On September 14, 1885, I arrived in New York with the intention of taking the winter course of lectures at the University Medical College. Just after my arrival in the city I had an attack of dysenteric diarrhœa to commence. No especial cause was assigned for the trouble by either Drs. Weisse or Thomson (both of whom prescribed for me at different times), and it was evidently not considered of a serious nature, as I was able to attend lectures about half of the time during the two months I remained in the city. For two or three days immediately preceding my arrival in New York I had rather overtaxed my physical powers in sight-seeing in Washington, and just before my arrival in the city I ate two oranges which were rather old and unsound. An hour afterwards, having reached the college building and started out to look for a boarding-house, feeling much exhausted I dropped into a First avenue bar and took a glass of beer, which proved not to be good, and an hour afterwards I had to look for a water-closet. *At no time was blood noticed in the passages, and at the commencement of the attack there was not much tenesmus, but some pain in the perinæum (which I had noticed a day or two just before arriving in New York, and was attributed to the much walking I had done in Washington).

About November 1 I was attacked with articular rheumatism, and left for home a few days afterwards. The trip home aggravated both the diarrhœa and the rheumatism, and for some days after my arrival home the rectum was so inflamed and sensitive that a cocoa-butter suppository with opium could not be retained. The salicylate treatment was used for the rheumatism and the subnitrate of bismuth and pepsin discarded, and opium in one form or another used instead for the diarrhœa. I recovered from the rheumatism after the usual six weeks, and the diarrhœa (or dysentery?) was controlled soon afterwards.

While my dysentery was worst my physician here endeavored to make an examination of the rectum by introducing a duck bill speculum, and although nothing was discovered at this examination it is entirely probable that this lack of discovery was owing to the examination having been unskillfully made, as after straining much at stool two hours after the examination I removed with my fingers, from within the grasp of the sphincter ani, an annular pendulous growth as large as an ordinary lead pencil. It was about 1½ inches long, hollow (or annular), and appeared more like the pedicle of a villous tumor than anything else; no trace of a tumor was visible, however. No microscopical examination was made of this growth.

Soon after the dysentery was checked I began to suffer with symptoms of stricture of the rectum, and in the latter part of March, 1886, I started north to consult experienced surgeons.

Early in April I was examined in Washington, D. C., by Dr. J. Ford Thompson, and he found a very close stricture commencing about 3½ inches from the anus. The stricture was so tight at this time that he could not penetrate it with his smallest bougie. Dr. A. F. A. King was present one time at Dr. Thompson's office and examined me, and although he evaded giving a positive answer I fully understood that he agreed with Dr. Thompson in his diagnosis, viz: that if the stricture were not already of a cancerous nature, it would become so very soon. This opinion Dr. Thompson declared to me and to my brother on several different occasions. Dr. Thompson sent me to Dr. Sands for examination. You will find Dr. Sands' opinion fully expressed in a copy of the letter enclosed, written to my preceptor (from whom I took a letter of introduction). This same exuberant growth removed from the lower margin of the stricture by Dr. Sands forms the foundation for all of the examinations made by the microscopists (that of Dr. Edward Schaeffer was given in writing, and is enclosed). I was examined next by Dr. L. A. Stimson, and he said at once "the growth does not feel like a cancer," but he declined to commit himself in a diagnosis until he had had the opportunity to dilate the stricture and explore it thoroughly. I consented to the examination under ether, and at my request Dr. Chas. B. Kelsey was present at the examination in the Presbyterian Hospital, May 18. In attempting to dilate the stricture it was torn, and linear rectotomy was performed at once. Dr. Stimson's opportunity for examining the stricture thoroughly was better than that of the others, who did not ask for an examination under ether. He said the stricture involved about 1½ inches of the bowel and was papillomatous in nature. Dr. Kelsey agreed with Prof. Stimson's diagnosis, and based his own on the microscopical opinion given him by Prof. Stimson.

I was very sick after the operation of rectotomy, caused, I have always thought, by having Fowler's solution of arsenic suddenly discontinued, which I had taken for some time immediately preceding the operation, in large doses, according to the direction of Dr. Sands. I was removed from the hospital to my brother's in Washington, D. C., and after three weeks was able to be out, and Dr. Thompson commenced to dilate the stricture with bougie.

July 4 I was examined by Prof. J. McLane Tiffany, of Baltimore, who made both a digital and microscopical examination, and he said, whereas he did not regard the stricture as cancerous at the time he examined me, that he thought it would undoubtedly become so in time, as my case had started in just the way most of the cancers of the rectum commence.

On July 5 I was examined by Dr. D. Hayes Agnew, who pronounced the stricture cancerous just as soon as he had made the digital examination, aud he confirmed his diagnosis with the microscope, declaring it cylindrical epithelioma (agreeing very nearly, you see, with Dr. Sands' diagnosis).

I was examined by Dr. Edward L. Keyes soon after I first met you in September, and he said he would pronounce the stricture benign, unless the microscope declared otherwise. He saw no objection to trying electricity, but could not recommend it as being likely to benefit me any. The microscopic specimens prepared by Dr. Edward M. Schaeffer from the exuberant growth removed by Dr. Sands were examined by Drs. Biggs, Geo. L. Peabody and Prudden (of P. & S.), and they all de-

clared the growth benign, but Dr. Prudden added that it would in all probability become malignant in time, thus agreeing nearly with Dr. Schaeffer's examination, as you will notice.

Now all these diagnoses were made up entirely from the case, as no two men whom I consulted knew anything of the opinion given by any other man in the case (excepting Drs. Kelsey and Stimson) until his own opinion had been given.

I hope you remember the very favorable impression my improvement caused Dr. J. Ford Thompson to form of the electrolytic treatment. When he examined me in March of 1887 he said, "You are a great deal better than when I saw you last, and your improvement can be due to nothing else you have tried save the electricity." "You have indeed been very lucky in trying it," he added.

I hope you will be able to find in my letter about what you wish, but if not do not hesitate to command any other information of me which I may be able to give you. I am only sorry I could not have remained in New York, and have been continuously under your treatment, when by now I would have been either entirely well or so much improved that even Dr. Keyes himself would have to admit that it had accomplished what he had several times declared it would not accomplish.

Dr. Kelsey, who was, at the time of my leaving New York, sanguine over the prospects of having found a new remedy in electricity for stricture, told my preceptor shortly after he called on you in New York last winter that he had since given electricity a thorough trial and that it was an entire failure. Dr. Wm. H. Thomson advised me once to continue the current, as the principle was a correct one. No change in stricture since last writing.

Hoping this will find you enjoying the very best of health and prosperity, I am, Very truly yours,

G. E. W.

COPY OF DR. EDW. M. SCHAEFFER'S REPORT.

Washington, D. C., June 26, 1886.

Microscopical examination of piece of growth from rectum. Left by Mr. G. E. W., pr. Dr. J. E. T. The sections were cut in the microtome and afterward stained with carmine and mounted in balsam.

The sections of largest diameter exhibit a rounded outline, approximating an oval, with a deep cleft extending to the centre, on one side.

Under the lens the following points are noticed:

1. The entire circumference, including the cleft mentioned, is lined with mucous membrane, showing the simple glands in their normal position, though somewhat hypertrophied in places.

2. Immediately below the simple follicles is seen the minute muscalavis submucosa, thick and well-marked in some places, irregular or wanting in others.

3. Several slightly enlarged "solitary glands" are seen, partly above oval, partly below the mus. submucosa.

4. The centre of the section is occupied by a connective tissue stroma, containing sinus of veins, tortuous arteries and lymphatics, the coats of all these vessels being in some places thickened and their neighborhood marked by a small-celled "exudation brood."

5. In no places throughout the twelve different slides studied is there to be seen any resemblance to scirrhus or alveolar cancer, or to epithelioma, or other malignant or semi-malignant growth. The growth then, so much of it as is included in these sections, is a nodule formed by a swelling of the submucous tissue, which is hypertropied, and upon which the glandular layer and epithelial coating of the intestine is arranged with as near an approximation to their usual position as is consistent with a distorted base of growth. The tumor is, however, different from a simple hypertrophy of the tissues involved, inasmuch as both in the mucous layer and also in the central connective tissue, there are indications of infiltration with the small round cells mentioned, more especially in the vicinity of the solitary glands.

Such infiltration, while common to many forms of inflammation, is an almost constant phenomenon in the vicinity of carcinoma, and as such it is to be regarded as suspicious in this connection. The very hypertrophy of the glands is also common to innocent as well as to malignant growth.

On the whole, then, I regard the prognosis as unfavorable, so far as based upon the probabilities of the direction which the growth may take in future.

EDW. M. SCHAEFFER, M.D.

COPY OF DR. H. B. SAND'S LETTER.

No. 35 West 33d St., New York, May 5, 1886.

Dear Doctor:—I have examined Mr. W. carefully, and have come to the unpleasant conclusion that his disease is malignant.

I find within reach of the finger, a close stricture of the rectum which is surrounded by a hard infiltration, that has all the characteristics of carcinoma.

When he came here I removed a small exuberant mass projecting from the lower margin of the growth, and caused it to be submitted to microscopic examination. It seems to be a cylindrical epithelioma, such as often occurs in this situation. Considering the disease is probably malignant, I would advise palliative treatment, and have instructed the patient what to do in the management of his case.

In my opinion, the disease is situated too far from the anus to make desirable any attempt at extirpation.

Should time prove the diagnosis to be erroneous, and the stricture turn out to be simple in character, linear rectotomy could be performed with a fair chance of recovery. But in the present circumstances I believe that any operation would be injudicious. Very truly yours,

To Dr. O. B. M. H. B. SANDS.

LETTER OF DR. L. A. STIMSON (COPY).

34 West 33d St., New York, June 16, 1886.

Mr. G. E. W., My Dear Sir:—I am glad to hear that you are so much better, although my anticipations when you went away were by no means so glowing as yours. If you are right in attributing your improvement to Fowler's solution, the sooner you get in the habit of taking it the better, in my judgment.

As to the character and extent of the rectal trouble, I have nothing to add to what I told you and your brother. The growth is papillomatous, with at present no infiltration of the deeper tissues, but I believe it should be placed at rest as far as possible; that is, that the stricture should not be allowed to reform. I should advise that it be at once dilated with the finger or large bougie to a calibre of an inch or more, and kept at that size by the regular use of bougies. I think it would be more troublesome to dilate it at once to full size than to dilate it gradually. Very truly, R. H. STIMSON.

Report of remarks of Dr. J. Ford Thompson at a meeting of the Medical Society of the District of Columbia, Dec. 7, 1887: "He never operates in the condition to which Dr. Reyburn refers. He thought electricity an agent for good, but it is too apt to be abused by enthusiasts. A few cases of stricture of the rectum treated by Newman, of New York, is worthy of mention. Dr. Thompson diagnosticated cancer of the rectum in a student of medicine; Drs. Agnew and Sands agreed with his diagnosis. He then went to St. Luke's Hospital in New York City, where a young physician cut the stricture. The patient stayed in the hospital until the wound healed, and then went to Boston, where he was under treatment for some time. He was almost insane and was sent to his mother in a deplorable con-

dition. He heard of Dr. Newman and determined to try his treatment. Dr. Newman applied electricity for several months. In about eight months a stout, healthy-looking man entered Dr. T.'s office, but was not recognized. He said Dr. N. could introduce an electrode as large as a hen's egg. The rectum was dilated, and there was a ring of hard tissue present, but the man was apparently healthy. He does not believe that this man has been cured, but he is practically well and may live a useful life for many years. In large hospitals such cases are surgical curiosities."

Dr. J. Ford Thompson is professor of surgery and the leading surgeon in Washington, D. C., a man in good standing in the profession, and appreciated for his good qualities and character. While he openly declares that he does not believe much in the praised effects of electricity in medicine, his voluntary statement of the improvement in this case by electricity is of so much more weight, and proves the honesty and uprightness of the professor, for which I tender my sincere thanks.

This case is of great interest in many respects. The documentary evidence, copied from the original letters, I have given verbatim, so that the history of the case is made complete and stands recorded and verified as facts. While I have given facts only, I make no comments or speculations on the case besides the claim that the stricture was benefited by electrolysis. I do not know whether or not the patient would have been cured had he remained longer under treatment. The next two cases, Nos. 9 and 10, are reported by Dr. J. G. Davis, who sent the patients to me for operation, was present while they were treated, and took notes of these cases.

Case 9 (No. 3001).—Mrs. J. M. R.; age, 46. *History:* Born prematurely; always a frail child; had almost all the ailments childhood is heir to; all through her earlier years had "falling of the bowels," as she termed it; menstruated at 14 years of age; caught cold the first time by exposure in severe rainstorm; even after had the most excruciating pain at each returning period, growing worse with the progress of time. There was a history of constant constipation.

In June of 1863, during defecation while straining, something seemed to tear or give way; profuse bleeding followed, which recurred very frequently from this time on. In the autumn of 1863 she was married. The general health improved but little; the dysmenorrhœa, however, nearly ceased. November, 1864, she gave birth, prematurely, to her first child, it only living three days. The rectal (or bowel) trouble grew much worse. Stomach troubles now began—most violent dyspepsia, bowels swollen, constant eructations of gas. Then followed typhoid fever, from which patient did not recover for forty days, a mere wreck of her former self. Convalescence was very much retarded by the rectal trouble, hæmorrhoids having developed during the pregnancy. In the three months following had seventeen attacks of "wind colic;" she says the doctor in attendance at that time (1865) so termed it. Nothing but morphine would stop the extreme nausea. Patient had now become a confirmed invalid. She dragged along with constant use of laxatives, emollient ointment and a syringe. The menstrual periods entirely free from pain after the birth of her child. Patient by an indominant will power seemed to fight her way back to tolerable health. With all these disadvantages she got along fairly well till August, 1885; malaria ran into a continued fever of a typhoid type; she recovered slowly. In December of same year was taxed greatly by sickness in the family. Trips up long flights of stairs, coupled with the care and anxiety, seemed to aggravate the already existing rectal trouble, and it became unbearable. She sought medical aid. From the nature of the stools and the history I suspected stricture in ani. On examination, found stricture within the sphincter ani, with masses in the rectum. I advised surgical aid. She submitted to an operation for the removal of the tumors. The old fissure (of so many years' standing) was full of cicatricial tissue, which was removed with the masses. Patient now began to recover.

In the healing process, notwithstanding there was dilatation almost every day, the stricture became more and more troublesome. Oil injections had been used with every stool. The surgical operation was a perfect success, inasmuch as all the diseased tissue had been removed. The resulting cicatricial tissue, with the stricture, made a condition that beggars description. The case seemed almost hopeless. Hearing, through another physician, of the success by electrolysis in urethral strictures, I thought that possibly my patient might get relief from that source. I proposed a consultation with Dr. Robert Newman, of Thirty-sixth street, in January, 1887. Dr. Newman confirmed at once to the use of electricity. The supersensitiveness of the parts required the use of muriate of cocaine. Séances as follows:

January 4, 1887. Examination at Dr. Newman's office. He found stricture in ani; backwards it was densest in the cicatrix, from the old fissure between the internal and external sphincters.

January 19. Electrolysis. Felt the warmth for hours. It also caused a very free evacuation of the bowels (as though physic had been administered). The day following bowels moved also like a regular stool, the first of the kind for years. Patient much improved.

January 26. Electrolysis. Again she felt the warmth for hours; 4 milliampères, and same relief as before, with the bowel movements.

January 31. Electrolysis, as before. Small metal bulb electrode as negative to cicatricial portion of the stricture, held posteriorly between the sphincters; 4 milliampères for six minutes; positive sponge in hand.

February 7. Electrolysis as before, the patient still improving.

March 28. Electrolysis, same as before, with same result. Patient left the city for a time.

July 7. Patient returned again. Had electricity applied as before; experienced even better results than before.

July 28. Electrolysis repeated, 6 milliampères. Current was felt more sensitively, owing to the near proximity of the cicatrix to the sphincter, and it contracting all the time. Patient again left the city for the West. Patient so much improved, has grown a little neglectful.

January 31, 1889. Had a séance again with Dr. Newman. He treated her with his new Cabinet battery, 13 to 17 cells for ten minutes. Negative metal bulb in ani, covering cicatrix by one side, the other side protected by the finger. Did more good than even before. After this séance but little cicatricial tissue left.

March 2. Electrolysis repeated with 11 cells, 4 milliampères.

March 26. Same repeated. Scarcely any cicatrix perceptible. Shall advise supervision of condition from time to time, for some months to come. Patient has improved correspondingly in every other way, and cannot express in words her relief from the horrible condition she suffered from so many years.

Case 10 (No. 3005).—Mrs. E. M. B., aged 42 years. *History:* Born in Connecticut, of healthy parents. She was not robust as a girl. Did not menstruate till she was 16 years old. She married at 20 years of age. Had no bowel trouble till she became enceinte. Then had hæmorrhoids for the first time; suffered severely. First and only child was born when she was 21 years old. From this time on, says she was a constant sufferer with these hæmorrhoids. Tried physicians everywhere; could get no permanent relief. She says Dr. Tucker, of Brooklyn, told her "her bowels were growing up;" this was in 1882. In 1883 Dr. Calkins, of Jersey City, operated upon her by cutting away some of the masses and injecting others hypodermically, she says, with nitrate of silver and carbolic acid (judging from the odor and stains left on her linen). Previous to this, and subsequent to the birth of her son, she had three miscarriages or abortions. All this time she has had constant and obstinate constipation, with pain in defecation, burning sensation in the rectum, headaches, dyspepsia, with swelling of the bowels. To use her own expression, "she had barrels of gas," the eructation being very disagreeable. She was dragging out a miserable existence. At this stage of the case I was called in to treat the uterine complications. On examination (May, 1886), found uterus very much enlarged and congested, with prolapsus and a marked lateral displacement, also erosion of the os. Patient candid in giving her history; dates all her trouble to her first pregnancy. Has been married twice; no children by her second husband. Has had no specific trouble, and no history that would lead to such a supposition. I treated the complications by the usual methods. Patient improved very much in her general health; still the rectal trouble distressed her greatly, large masses protruding with every defecation. She would be prostrated with the distress. I told her she must have surgical help before she could recover. She concluded to go to the hospital. She entered July 3, 1886, was operated upon the 5th. The fibrous masses were removed by the knife. The surgical operation was a success, as far as the removal of the masses was concerned. As the points of incision healed, the cicatricial tissue formed increased the rectal difficulty. There were no evacuations of the bowels except under the use of laxatives and the syringe. (Will say, after Dr. Calkins' operation there was a very aggravated inflammation of bowels and uterus.) She continued with emollient ointments, laxatives and the syringe till late in the autumn of 1887. Patient returned to me for treatment; said she must have speedy relief, or she could not live. From the symptoms I had suspected stricture of the rectum for some time, but there was such a state of inflammation that she could not make up her mind to submit to a thorough examination. I, however, used cocaine 4 per cent. solution. On examination, found my fears confirmed. I at once proposed consultation with Dr. Newman, as he had benefited my previous case so much and so quickly. January 25, 1888, I took her to Dr. Newman's office. Her bowels were very costive and full of gas; rectum sore within and around the anus; fæces can not pass as a formed mass, only by laxatives and aid of syringe. Around the anus were remnants of hæmorrhoids rolled out of the mucous lining. Between the sphincters are denuded surfaces irritable to the touch. Sphincters are in constant contraction, causing pain and resisting the entrance of the finger or speculum. This examination was performed with or by the aid of cocaine. A metal egg-shaped bulb (No. 33 French) meets resistance at 3 and 5 inches, negative pole (with this bulb); positive in the hand. Electrolysis, 5 milliampères, overcame the resistance and passed up 9 inches. Cocaine was used; also prescribed a saline apperient; also Mitchell's suppositories: No. 10. ℞. Ext. belladonna, gr. ss; ext. opii, gr. 1. Circumference of electrode, 1¼ inches.

January 28. Electrolysis. Flat metal electrode 1¼ inches in circumference, as negative, passed both strictures with comparative ease; went up 6

inches, 5 milliampères for fourteen minutes.

February 1. Electrolysis. Round electrode 1¾ inches in circumference passed up as before, 9 inches.

February 8. Same electrode as used the last time passed with more ease and up to 12 inches.

February 11. Electrolysis. Round vaginal bulb electrode 2¼ inches in circumference passed quite easily up to 5½ inches. At this séance galvanism was used externally, positive pole on the pit of the stomach, negative moved in the direction of the colon, to increase peristaltic action. Did much good; caused the dislodgment of old fæcal matter.

February 25. Electrolysis as before, same bulb passing up 6½ inches. External galvanism again.

March 28. Electrolysis as before. Hæmorrhoids in anus giving trouble. Prescribed ointment to be applied with Pile syringe. ℞. Ung. hydrarg. ammoniatum.

April 7. Electrolysis as before. Same bulb, round, 2¼ inches, passed by degrees to 8 inches; 10 milliampères; also prescribed pills:

Hydrastin	40 gr.	
Ext. gentian	20 gr.	One, ter. in die.
Ft. pill	No. xx.	

April 21. Electrolysis. Large round bulb passed quite easy. Hydrastin pills doing good.

May 2. Electrolysis, same as before; 2¼ inch bulb passed to six inches with ease.

June 11. Electrolysis, same as before; strictures nearly gone.

July 7. Electrolysis as before; case still improving. Patient left the city for the summer, much improved in health.

September 15. Electrolysis as before she went away. Large bulb passing readily to 8 inches.

October 6. Electrolysis as before, with the same result.

November 14. Electrolysis as before, same large bulb electrode passed to 11 inches with ease, strength of current 10 milliampères.

December 12. Electrolysis as before, stiff flat electrode passed to 5¾ inches.

May 18, 1889. Reëxamination at Dr. Newman's office. Rectum was found in good condition, a large metal bulb passed easily, without finding a stricture.

Case 11 (No. 3041)— Stricture and Ulcerations in Rectum.—H. K., æt. 26 years, married, bookkeeper; complains of dysentery, frequent bloody stools, pain in rectum, particularly on defecation. When 8 years old, he had daily four to six passages, which were diarrhœal in character and mixed with blood. There was prolapsus ani to such a degree that the rectum protruded outside almost every day. This state lasted for years, until he was almost 18 years old. Then he was comparatively well until eighteen months ago. He had dysentery and the bowels acted similarly as during his former illness. He had loose bowels, frequent passages of a dark color mixed with blood, pain, capricious appetite, meteorisms, lost flesh and became very weak. He has been treated in turn by different eminent physicians, who prescribed medicine for him, but neither of them examined his rectum.

June 10, 1888. Examination. Rectum is so sensitive that a digital examination could not be made. Injected a solution of cocaine, and then made an examination with the endoscope. Found rectum very much inflamed, with a high red color, mucous lining congested with several ulcerations, from which blood oozed. Endoscopic tube would not enter further than 4 inches, where it was arrested, and a stricture found. The ulcerations were touched with a solution of nitrate of silver. Injections of soap and water were ordered, also a weak solution of cocaine in case the pain should be troublesome.

June 17. Electrolysis; positive sponge electrode in hand, negative flexible electrode with a round metal bulb at the end, of 1¼ inch circumference, in rectum, was arrested at 4 inches by the stricture. A current of 5 milliampères acted rather severely, patient complaining of pain, and had to be reduced to 4 milliampères. After seven minutes the bulb slipped through the stricture, and then was inserted 12 inches up, without finding any other stricture. On withdrawal, the stricture was further electrolyzed. The whole séance lasted twelve minutes.

June 24. Endoscopic examination found the whole rectum much improved; the tube did not pass the stricture. The ulcerations were touched with the solution as before.

July 1. Electrolysis, positive in hand, negative in rectum, with a round metallic bulb 1¾ inch in circumference. There was not so much sensitiveness and a current of 10 milliampères was tolerated, the bulb enlarged the stricture more and after five minutes passed it, and was further introduced to 8½ inches. Séance lasted eight minutes.

July 7. Endoscope revealed much improvement, ulcers have nearly healed up, mucous lining is less congested, color is better, a light application with a brush given. A tonic and appetizer ordered.

July 13. Electrolysis Negative flat bulb, circumference 1¼ inch, passed up only 3½ inches, 8 milliampères for six minutes.

July 20 Endoscope found parts very much improved, in fact almost well. Patient feels well now, has every day only one passage, which is nearly normal; fæces well formed, but a little flattened. Ordered one pill at night of hydrastin.

August 3. Electrolysis. Negative round metal bulb 2¼ inches in circumference for twelve minutes, with a current of 10 milliampères, passed well through stricture.

August 17. Reports progress in every way; is

almost well. Endoscopic tube passes through the stricture.

August 24. Electrolysis Negative bulb 3½ inches in circumference passed stricture after four minutes. Current increased to 12 milliampères, was well borne. Séance eight minutes.

September 2. Electrolysis. Large vaginal conical electrode passed stricture, enlarging it to 4½ inches in circumference, ten minutes, current of 10 milliampères.

September 30. A large bougie 4½ inches in circumference passes without an electric current. Patient is well. Bowels are regular, evacuations of a brown color and normal in every way. He has a good appetite, has gained flesh, and feels good in every respect.

1889. Have seen him recently, he had no relapse and kept well.

Case 12 (No. 3061).—Miss K. L , æt. 30 years, single. Has complained for years of a stubborn constipation with pain on defecation, stools changing from flat ribbon-like fæces, with diarrhœal discharges, and again constipation of one movement in a week; sometimes a protrusion of a mass from anus. She has taken medicine and injections with partial, temporary relief, but has opposed an examination. Her general health has run down, she has lost flesh and ambition, so that necessity compelled her to permit an examination.

August 31, 1888. On digital exploration of the rectum a semi-solid tumor was found 2½ inches from anus, with uncertain margins, and hard masses in it. There is a decided stricture, the cavity in rectum ends abruptly like a cul-de-sac, so that it is difficult to find with the finger a continuation of the passage. The semi-solid mass is movable and can be pushed upwards. A small bougie passes the stricture, then advances easily and enters the sigmoid flexure.

September 6. Electrolysis. Finger reaches the tumor at 2½ inches from anus, when the continuation of the passage is lost, and the tip of the index finger appears to be in a cul-de-sac. A flexible electrode with a round bulb at the extremity, however, finds an opening, and by an electric current of 7 milliampères passes 9 inches upwards. The stricture is felt distinctly from 2½ to 3½ inches, and surrounding it is the tumor.

September 12. Electrolysis. Positive sponge electrode in hand; as negative a stiff electrode, with a flat metal bulb 1½ inches in circumference, with a current of 10 milliampères for twelve minutes, passed only 6 inches up. The tumor thereby was greatly diminished in size. The nature of this tumor I could not tell, but know positively that it is no hæmorrhoidal tumor.

September 19. Electrolysis. Negative pole, with a rectal round metal bulb 1¾ inch in circumference, passed 12 inches up the rectum and over sigmoid flexure easily. There is more marked improvement. Ten milliampères for fifteen minutes.

September 28. Electrolysis with 4 milliampères for eight minutes made marked improvement, tumor further diminishing.

October 5. Electrolysis repeated as before; 26 cells; 12 milliampères for fifteen minutes.

October 30. Electrolysis as before. Tumor has much diminished in size, is now only a small mass, as large as a big hazel-nut.

November 16. Electrolysis. Negative flat stiff electrode 1¾ inch in circumference passes well up to 6 inches with a current of 10 milliampères for fifteen minutes.

December 2. Electrolysis. Negative large, round bulb electrode, 10 cells, 5 milliampères for five minutes; then 20 cells, 12 milliampères, gave no inconvenience or unpleasant sensation. Electrode advanced up to 10 inches, but stricture at 3 inches was felt.

December 15. Patient feels well, a large vaginal bulb as negative electrode, 3 inches in circumference, passed easily up with a current of 6 milliampères. Séance 9 minutes. Patient is so well that she has discontinued any further treatment.

From other reliable sources two interesting cases are reported as follows .

No. 13.—Case of Stricture of the Rectum Treated with Electrolysis by Samuel Benton, M.D., M.R.C.S.—(*London Medical Register*, May 12, 1888.) *History:* S. T., aged 39 years; a married woman; has had five children; two living; youngest six years old. All her confinements natural; the last took place three years since; it was an eight months child, and lived five weeks; the other two children were prematurely born and died a few hours after birth. She has not had a miscarriage, and has never suffered from constipation or syphilis. About five years ago, after stool she had to lie down for ten minutes with acute pain at end of bowel; and sometimes a little bleeding occurred, which made her dread having a motion. Soon after this she noticed that the fæces were small, and defecation was accompanied by a bearing down sensation. Latterly, her symptoms have become more severe, the bowels acting three or four times a day; stools liquid.

Examination of Rectum.—A polypoid growth seen protruding outside anus about the size of a pea. Two inches from anus a stricture can be felt, which will not allow the little finger to enter.

A No. 1 rectal bougie was carefully held against the stricture for two minutes, but it could not enter. A No. 27 French urethral bougie was the largest instrument that could be gotten through the stricture.

Treatment.—Feb. 27, 1887. At first gradual dilatation was attempted by holding a metal electrode, equal in size to a No. 29 French urethral bougie, against the stricture for several minutes, but it failed. The negative pole of a

continuous current battery was thus applied to the electrode by my colleague Mr. W. T. Whitmore; at first 4, afterwards 6 cells used; strength 15 to 20 milliampères; the patient merely feeling a little tingling sensation; but no pain. After six minutes the electrode slipped through the stricture.

February 9. A No. 29 French bougie passed of its own accord, after being held in the stricture. An electrode applied equal to No. 33 French negative current, 8 cells, used for half an hour; this went into the stricture, but not through it.

February 16. Patient states that she has had far less straining at stool, and feels decidedly better; bowels acts usually three times a day. An electrode equal to No. 33 French, or large No. 1 rectal bougie, applied for four minutes, but did not pass. Negative pole attached, and 6 cells used for 12 minutes; 8 cells applied, strength a little over 15 milliampères, for 15 minutes; the electrode then slipped through the stricture.

February 22. Catamenial period being in, treatment postponed.

March 3. Electrode applied, equal to No. 2 rectal bougie, for 30 minutes; 6 cells used, strength 15 milliampères; it passed into the stricture and was allowed to remain for 10 minutes. After this séance she felt so much relieved that she discontinued coming up to town for treatment.

February 27, 1888. A lapse of one year. Patient feels much better; she is stouter, has far less bearing down pain, and is able to pass a motion the size of her little finger. A No. 2 rectal bougie passes through the stricture without difficulty. She states that during the past year she has not been required to consult a doctor. "I am in much less discomfort; feel better in every way, and have derived great benefit from the treatment."

For the first few months after she left off coming to London she gave herself, about once in three weeks, a warm injection; but thinking this brought back the bearing down pain she discontinued it. Her bowels still act three times a day—in the early morning, after breakfast, and in the evening. She always sleeps lying on her back; bearing down and discomfort follow it. (She lies on either side.) A large sized No. 3 rectal electrode applied for ten minutes; 10 Leclanché cells, 2 milliampères, and then 15 cells, 5 milliampères applied for 6 minutes. It enlarged the entrance to stricture, but did not pass through.

March 6. She has felt very well since last séance. A small No. 3 rectal bougie passed through the stricture; No. 2 electrode, large size, passed into the stricture, and held there for 15 minutes; 10 cells used, strength 2½ milliampères.

March 19. Patient feels better. The index finger can be got into, and a No. 4 rectal electrode slips through the stricture. Negative pole attached to No. 4 electrode, 15 Leclanché cells used, strength 5 milliampères for 6 minutes; then 20 cells used, strength 10 milliampères, and left in the stricture 25 minutes.

Remarks.—For rectal work I prefer the metallic bulb of the electrode to be acorn shape; electrodes of this sort have been made for me by Messrs. Coxeter & Sons. Urethral electrodes should be made with egg shaped bulbs, as recommended by Dr. Robert Newman of New York. From the above notes it will be seen that this severe case of stricture of the rectum yielded to treatment by electrolysis, and at the end of a year the improvement was maintained. During this year no bougie was used, and no medicine taken. There is an element of risk about proctotomy, and had this operation been performed, she would certainly have had to keep her bed for a considerable time, and probably been condemned to use bougies for the rest of her life; gradual dilatation was attempted but failed. The patient whilst under electrolytic treatment was able to carry on her usual domestic duties, but the great interest of this case centers in the fact that the benefit derived was maintained after a cessation from treatment, for twelve months. Dr. W. T. Whitmore of London, has also treated cases sucessfully with electrolysis. His paper was read at a meeting of the West London Medico-Chirurgical Society and it is now in press, as I perceive from a private letter of Dr. Whitmore. The cases of Dr. Benton have not had a relapse in two years, as he reports to me in a letter as follows:

COPY FROM DR. SAM. BENTON'S LETTER.

LONDON, June 1, 1889.

Dear Dr. Newman:—The two patients who I treated for stricture of the rectum by electrolysis, and published the cases, have remained well and are permanently benefited. I have not had any more cases suitable for this method of treatment, or I should certainly use it again, etc. Yours,—

Case 14.—Dr. S. T. Earle, Jr., reported this case to the Medical and Surgical Society of Baltimore, and kindly has sent me the following notes:

Mrs. H. White, æt. about 30 years, has been troubled with difficulty in evacuating her bowels for the last seven or eight years. She presented herself to me for treatment by the advice of Dr. Rohé, January 26. I found a very tight stricture of the rectum, the result of specific lesions, about 1 inch above the normal site of the anus, and extending about 1 inch up the rectum. There was a considerable discharge of a thin muco-purulent character, a neoplasm as large as a walnut in Douglas' cul-de-sac, and the anterior wall of the rectum below the stricture was considerably thickened. Her evacuations were nearly always fluid in character, yet caused considerable pain, and

when moulded were very narrow, and ribbon-shaped, and their discharge was attended with excruciating pain. The stricture was so tight as only to admit an ordinary size probe. She suffered very much with dysmenorrhœal pains, and copulation was also very painful. Also had frequent and severe headaches. At the suggestion of Dr. Rohé I determined to try electrolysis alone for the treatment of her stricture, unaided by any internal antisyphilitic remedies. I commenced the treatment with a Barrett chloride of silver battery, using from 10 to 15 cells without measuring the amount of current with a galvanometer. I used the negative pole in the rectum, and commenced with an electrode ⅛ of an inch in diameter, gave her two sittings a week, of fifteen minutes each. By the sixth sitting I had gradually increased the size of the electrode, until I had gotten to use one between ⅝ and ⅞ of an inch in diameter. Not being satisfied with the progress made in the absorption of the neoplasm, and desiring more current strength with less electromotor force, I substituted a Waite and Bartlett battery for the one I had been using—at the same time measured the amount of current used with the same make of galvanometer. I thereafter used from 50 to 100 milliampères of current. While the last mentioned strength of current produced considerable irritation of the rectum for several days, the intermediate strengths mentioned did not. Under the increased amount of current strength the neoplasm began to be absorbed rapidly, and disappeared entirely by the expiration of six or eight months; the discharge from the rectum of muco-pus lessened rapidly, the stools came with less and less pain, and soon began to be moulded, the dysmenorrhœal pains gradually passed off, copulation grew less painful, and she improved very rapidly generally. As cool weather came on the following fall, about eight months after I had begun the treatment, she again began to suffer very much with her head, and I placed her on potassium iodide internally, having satisfied myself that the good results gained in the rectum had been entirely due to electrolysis. This soon relieved her headache. After having gotten to the point where she had scarcely any trouble with the rectum, I then directed her only to come for treatment about once in two weeks, and she has continued to come at this interval ever since, with the exception of between two and three months in the early part of this year, when she did not come at all. When she did return I found the stricture a little tighter, but in two sittings got it back to where it formerly was. I did not exceed in the size of the electrode the one between ⅝ and ⅞ of an inch in diameter, as that was sufficiently large to allow her to have moulded stools with scarcely any pain. I should have stated that this patient has been treated three years prior to my seeing her, first with gradual dilatation by bougies, then by a linear proctotomy; the latter, however, was not followed by dilatation, and of course healed, leaving her in a worse condition than before. This obliterated her normal anus.

Dr. W. E. Stevenson, of London, writes in Cooper's Treatise on Diseases of the Rectum as follows:

"Strictures of the rectum can, like all other strictures, be treated by electricity. The amount of success achieved by this means depends upon the nature of the obstruction. In some cases cure can be effected, in others relief only can be obtained. But in these latter cases, where the stricture is due to cancer, life can be prolonged for a variable period, and made more endurable by the relief of pain; and that last and terrible expedient of colotomy can be postponed and perhaps dispensed with altogether."

As these words coincide exactly with my own experience, I took the liberty to make the quotation, and consider it of importance, as it comes from the best authority in London.

In recapitulating the facts in these twelve cases we find some interesting items. It seems that females are more inclined to have stricture; as out of twelve cases only two were men. Their ages were mostly between 30 and 40, the youngest 24, the oldest 62 years old. The two males were comparatively young men, respectively 23 and 26 years old. Eight cases were single strictures, four had multiple strictures. The duration of the malady was from 6 months to 20 years; the causes varied, but hæmorrhoids and constipation were important factors; other causes were syphilis, venereal, enteritis and dysentery. It is certain that a rectal stricture may follow any inflammation of the rectum. One case had the complication of five fistulæ, commencing in rectum and ending externally in different parts in vulva and gluteal region. As soon as the stricture was cured, the fistulæ healed up without any treatment. Only two cases had no previous treatment; two had medical, and the balance surgical treatment; six of which had been operated upon with the knife. Not in a single case had the previous treatment been successful, some were entire failures, and all that can be claimed in some exceptional instances, was a temporary relief followed by relapses. Even the most sanguine operator will admit that proctotomy must be followed by the use of a rectal bougie at regular intervals. If we now compare all other methods used formerly, with the treatment by electrolysis, we find that the latter has improved every case at least, and in the majority of cases has effected a cure. The three cases, 5, 6, 8, were certainly improved, but in the end may not prove satisfactory: one patient had too many complications, and while I have not heard from her, I know she could not have been permanently bene-

TABULAR STATISTICS OF THE TWELVE CASES.

Case.	Sex.	Age.	Strictures. No.	Strictures. Location.	Strictures. Duration.	Cause and Complication.	Result of Previous Treatment.	Result of Electrolysis.	Remarks.
1	F.	24	1	2½ inches.	6 mos	Venereal, 5 fistulæ.	Dilatation, no success.	Cure.	Post-mortem specimen showed no relapse.
2	"	62	1	4 "	2 yrs.	Constipation, atony.	Medical, no success.	"	No relapse in 10 years.
3	"	30	1	1½ "	5 "	Syphilis, pelvic cellulitis.	Dilatation, proctetomy, etc., Relapse.	"	Remained well as long as heard from for ten years.
4	"	38	1	2½ "	2 "	Hæmorrhoids, constipation.	Operation, relapse	"	Not heard from.
5	"	36	4	2, 3, 5¼, 10.	5 "	Syphilis, malaria, tuberculosis	Dilatation "	Improved.	
6	"	35	3	1¼, 3, 5, in.	10 "	Constipation	Proctetomy repeated, relapse.	"	Proctetomy; afterwards had to use rectal bougie; died Oct., '88.
7	"	43	2	5, 10 inches	3 "	Membranous enteritis		Cure.	Heard from; no relapse for 3 yrs.
8	M.	23	1	3½ "	1 "	Dysentery, suspected malignancy.		Improved.	Heard of recently; is not worse.
9	F.	46	1	1½ "	10 "	Hæmorrhoids, fissure.	Proctetomy, operat'n, relapse	Cure.	" " " no relapse in 1 yr.
10	"	44	2	3, 5 "	20 "	Hæmorrhoids, constipation.	Operation, relapse	"	" " " " " "
11	M.	26	1	4 "	1 "	Dysentery proctitis, prolapsus, constipation.	Medical.	"	" " " " " "
12	F.	30	1	2½ "	3 "	Tumor of uncertain nature.		"	" " " " " "

fited; the second was an aggravated case, and the patient too poor to attend to herself, or even to come regularly for treatment. This case was then operated upon, and she had to use a rectal bougie regularly, by which means she kept the stricture from closing up again; but after four years had a relapse with complications and finally died. The improvement in the third case, No. 8, has been graciously acknowledged by several surgical authorities; however, the patient had to leave the city, thereby interrupting the treatment, and a papillamatous growth, which by some was considered cancerous, complicated the case to such a degree that a cure could scarcely be expected under any treatment. These cases are given just as they were, without claiming any success. The remaining nine cases, however, were cured by the electrolytic treatment, and as far as known no relapse had taken place, which were from one to ten years respectively; except one case in which nothing has been heard from.

The best results were achieved from the same method as used in treatment of urethral strictures by electrolysis, that means by metal bulbs, as negative, weak currents in intervals. But it is in the nature of the parts treated upon, that the current can be applied stronger and oftener than in the urethra. While in the urethra, a current of five milliampères is strong, we may increase in the rectum the current to fifteen and sometimes to twenty milliampères, we may prolong a séance from ten to thirty minutes, and repeat it in four days. Stronger currents and the treatment by needles have not proven as successful in my hands.

I hope not to be called too sanguine or an enthusiast, when I come to the following conclusions:

1. Electrolysis in the treatment of stricture of the rectum is not a panacea, on the contrary failures may happen; and probably will ultimately fail if the stricture is due to carcinoma.

2. Electrolysis will give improvement to the rectal stricture, when all other means have failed.

3. Electrolysis will cure a certain percentage of cases, without relapse, better than other modes of treatment, and without the necessity of an after-treatment or using bougies.

4. The best chances for a cure are with the fibrous inflammatory strictures.

5. The best mode of treatment is by a metallic bulb as negative, weak currents and intervals of four days to two weeks. (Further experience in time may change this rule.)

With these conclusions, I recommend electrolysis in the treatment of rectal stricture to the kind consideration of the profession.

68 W. 36th St., New York, June, 1889.

THE ORIGIN OF BONE AND JOINT SUPPURATION.

BEING A DISCUSSION OF THESIS NO. XXIX, "THE MOST FREQUENT CAUSE OF EITHER[1] IS TRAUMATISM," HELD BEFORE THE ST. LOUIS ACADEMY OF MEDICINE.

BY JOSEPH L. BAUER, M.D.,

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Prior to the bacteriological era, the existence of bone and joint disease was ascribed to either scrofula, struma or traumatism. The exponents of the latter based their etiological views, as they do to-day, upon clinical facts and the results of a methodical, yet purely mechanical treatment. The former view owed its prolonged existence to the seeming ridiculousness of ascribing so much responsibility to an injury, ofttimes of apparent harmlessness. Indeed an eminent satisfaction seized them, when the oft repeated question was asked: If as you contend a seeming slight traumatism should produce such dire results, why is it disintegration of bones and joints follows so rarely upon a dislocation or a fracture? This very sophistical question, often determined the views of the majority, and hence the growth of opinion

[1] The Differential Pathology and Diagnosis of Peristitis, Ostitis Osteomyelitis, by Drs. Lous Bauer and E. M. Powers.

in favor of the traumatic origin of these pathological conditions has been slow. A calm, logical consideration of the question can net but one result. The tendency of all injuries to the body is towards repair, provided the *vis medicatrix naturæ* is aided by the skilful assistance of the physician *in proper time*, and provided: the *vis medicatrix naturæ* is not modified in its activity by an inherent or imposed defect. Nor must this *inherent* or *imposed defect* be hypothetical, but must be proven by indisputable clinical evidence. Therefore hereditary influences must be *established* by the positive history of the family, and the imposed influence must be shown, not by the theory of *locus minoris resistentiæ* as a selective spot for mycotic elements to germinate and destroy. But, it must be established how these mycotic elements *secure* entrance into a healthy body, and await an injury to establish their disintegrating properties. And, we may safely assert, that the presence of bacteria or microbes of greater or lesser virulence in the circulating medium of the body, is in *itself* not sufficient to establish their activity upon a traumatism. In other words, like Darwin's missing link, "there is something wanting" to render such a position irrefutable.

Before discussing the latter proposition, I will have to revert to the simple differences between a traumatised bone and joint and a fracture or a dislocation. In the former the injury is noticeable but a moment, and becomes prominent only when the persistent violation of Nature's laws intensifies the original assault. In the latter, pain and physical defect is serious, and the physician is called at once to relieve it and place it in a position for Nature's reparative process. I will admit that this explanation must perforce be modified, if we take into consideration a few distinctive lesions that follow a badly set fracture and an unreduced dislocation. But, if it modifies the theory of traumatism, it certainly disestablishes the microbic view of *locus minoris resistentiæ*.

Prof. Dr. F. Rinne, of the Pathological Department of the University of Greifswald, has just concluded an excellent article in the *Archiv. für Klinische Chirurgie*, which embodies the detail of a large number of crucial experiments with reference to the subject under discussion, which in my opinion forever sets at rest the theory that there is a *locus minoris resistentiæ* for pathogenic microbes circulating in the blood.

Before, however, referring to his theses and the experiments which elucidate them, it may be well to cite an important case, which in a clinical sense adds strength to his position. For if this case shows anything, it demonstrates Mr. Hilton's proposition that, "Rest is the necessary antecedent to the healthy accomplishment of both repair and growth;" or as my friend, Dr. Bernays, aptly puts it, "The fact that growth and repair bear an exactly proportionate relation to physiological rest, local as well as general, is certainly the natural suggestion of a means towards an end, which should ever be kept prominently in view by the practitioner of medicine," and he might have added the practitioner of surgery. If the modern view of disease is accepted, the sensible suggestions of both of the gentlemen lose much, if not all of their weight.

Case 1.—P. S., æt. 11, was sent to me by my esteemed friend, Dr. D. W. McKeen of Russell, Kansas. The little fellow fell off his horse two and a half years previously, and soon thereafter presented a protuberance of the dorsal vertebræ. Before the deformity was noticed, he suffered with girdle pains, weakness of the extremities, gradually lost flesh, appetite grew less, in fact he soon presented the symptoms of spondylitis. When I saw him the deformity had made some headway; the bones and environment were painful to pressure and locomotion, locomotion was impeded by a feeling of weakness in the extremities, emaciation was marked, he had a rise of evening temperature; in fact presented the evidences of decided and rapid decay. The right eye bore evidence of specific disease. All sorts of treatment had been applied to no avail. I did not pay much attention to the condition indicated by the ocular change. Upon my suggestion the mother permitted me to take a cast of the spine, so that Bauer's cuirass, could be properly fitted by it. I also advised her of the necessity of her child maintaining *absolute recumbency* for at least six months. Hardly a week elapsed, when a change for the better manifested itself in every respect up to within a few weeks before the expiration of four months maintained in the recumbent posture. During all this time his appetite improved, his complexion became clearer, the pains disappeared. At the time mentioned he was seized with a cough, which soon developed a serious pulmonary complication. Another physician was called in who pronounced it miliary tuberculosis, and gave an unfavorable prognosis. This changed condition was communicated to me and my advice sought. I insisted upon his immediate removal to the city, assuming all the responsibility for the long journey. Upon arrival in the city, and after a careful examination, I diagnosed syphilis of the left lung. My reasons for doing so were first:

1. The history of hereditary syphilis.
2. The absence of irritative symptoms.
3. The *rapid* and *universal* involvement of the left lung.

Stuffing with Nicholson's liquid bread, Catlin's beef, wine and iron, claret, milk, cream, etc., and the systematic application of the inunction treatment sufficed to restore the lung to almost complete vitality, and to stimulate Na-

ture's forces to renewed activity. When he left for home, the little fellow was to all intents and purposes well, and after a short continuance of the inunction he was given the iodide of potassium in ascending doses. When last heard from, "we cannot give him enough to eat." *No symptoms have developed traceable* to the vertebral lesion.

If this case proves anything, it shows that the constitutional vitiation exercised little or no influence upon the spondylitis, but that the enforced rest of the diseased spinal segments was sufficient for the restorative process.

Though our discussion specifically considers osteomyelitis and periostitis, it may not be amiss to include the etiological phases of some joint injuries. For this purpose the following case may be of interest also.

Case 2.—W. J., æt. 22, a lather by trade, whilst trimming a lath with an adze inflicted a perforating wound in the left knee-joint. He paid little or no attention to the injury, though noting that from the moment of the injury synovial fluid exuded from the opening. He continued to walk about though suffering considerable pain. One week after the injury he called at my office, though hardly able to walk. A careful examination noted loss of contour in the injured knee-joint, pain over the entire joint upon point pressure or movement; elevated local and general temperature; pus in considerable quantities oozing from the wound. A probe passed into the wound communicated with the joint. I at once decided to place the joint at rest in the extended position and protect the wound by simply applying some absorbent cotton. This was done and the limb immobilized by plaster of Paris bandage. This was at three o'clock in the afternoon; about 8 P. M. I was hastily summoned to see the patient and found that he was delirious and suffering considerable pain, which I attributed to pressure solely. The plaster of Paris shears soon relieved the pressure of the bandage and Bauer's gutter splint was substituted from that time to his complete recovery, a period involving two and a half weeks. No antiseptic medication, either internal or external, was prescribed and yet the patient recovered with full use of his joint.

No one will deny at this day that much has been gained by the acceptance of the microbic origin of suppuration as it occurs in bones and joints. And yet, if we examine the citation of cases, where so-called spontaneous suppurations have ensued in previously healthy subjects, where a general infectious disease or infectious center has not existed heretofore, or at the time of the suppuration, we are forced to doubt the exact force of the modern theory. Thus, Bryck (*Langenbeck's Archiv.*, Bd. xv, "Researches as to Resections") suggests a case of femoral dislocation, in which suppuration occurred after repeated attempts at reduction. The patient, 17 years of age, had previously been healthy.

P. Bruns (*Beitrage zur Klin. Chirurgie*, Bd. 1, S. 237ff. "The Torsion Fractures of the Cylindrical Bones") observed two cases of subcutaneous spiral fractures of the femur suppurate. Both patients died from septicæmia. In one there was also a compound fracture of the tibia with a fissure leading into the knee-joint. The knee-joint was filled with blood and air. Both joint and fracture treated antiseptically. Whilst these injuries were attended in the best of manner, the simple fracture of the femur suppurated. In the pus was found numerous cocci, connected often with diplococci and occuring in the chains, and in fresh preparations manifested a trembling movement.

Steinthal ("Suppuration of Simple Fractures," *Deut. Med Wessensch*, 1887, No. 21) describes two cases of simple suppurating fractures observed in the clinic at Heidelberg.

The first case a fracture of the femur in a hitherto healthy man, 28 years of age. From the very beginning he had high fever, and four weeks subsequently an abscess developed at the point of fracture, the pus odorless, suppuration of knee-joint, abscess of forearm, thrombosis of femoral vein in opposite limb and decubitus. Patient died. The second case concerned an old luxation of the caput femoris where efforts of reduction produced a fracture. Prior to that time the patient was always well, fourteen days subsequently fever set in and fluctuation appeared, five weeks afterwards an incision discharged one pint of a stinking grayish, green pus, the necrotic head was removed and the patient recovered.

In this case the patient had suffered from diarrhœa, probably from the presence of ingesta due to bad teeth. Steinthal thought that infection proceeded from diarrhœa. The first patient also had a diarrhœa beginning with the tenth day, but his fever commenced at once. S. believed that the infection proceeded through the lungs. Such a supposed infection in the absence of any expressed data where the poison had entered, inasmuch as there was no cutaneous injury, no erysipelas, nor any other manifest complication renders the speculations of S. very questionable.

It may be asserted that it is ofttimes impossible to determine a small cutaneous abrasion in a tissue swollen and folded by an injury, but as suppuration is so rare as a consequence of subcutaneous injury, we may leave this point untouched.

If we were to consider the respiratory or digestive tracts as points of entrance into the system and apply this supposition to the cases cited, it is difficult to perceive how the infectious material could reach the injured spot, without first affecting the general organism.

Now, Mr. Chairman, we are acquainted with the experiments of Rosenbach and others that suppuration may ensue as a result of an irritant injected subcutaneously, but as several gentlemen of the Academy do not consider the test a crucial one, I have concluded to present the résumé of Prof. Rinne, as found in his masterly essay and crucial experiments on suppuration and its metastases, and I trust the enthusiasts who look upon the microbes as the essential factor in the suppurative process will peruse it carefully.

"In taking a retrospect of the results of my investigations, we find that a long series of mechanical lesions in which the local presence of pus-cocci existed, has not the power of developing phlegmonous suppurating processes, provided the local injury is protected against the entrance of atmospheric air or oxygen.

"Subcutaneous incisions, even though immediate and concentrated injections of watery mixtures of the staphylococcus aureus and streptococcus were made in the surroundings on the injury, *did not suppurate.*

"Coccus mixtures were prepared by such concentration of pure cultures, that numberless cocci could be observed in one drop by the microscope. Therefore an uncomplicated, fresh subcutaneous wound is not a fertile soil for pyo-cocci in loco. Resorption is as rapid as in normal tissue, too rapid for the cocci to secure time to develop ptomaines, to irritate the tissues and multiply.

"Glass capsules filled with coccus-mixture and intimately grown into the skin is just as harmless, though the capsules are shattered weeks afterwards, and the cocci are permitted to come in contact with the young cicatricial tissue. Even though we then inject into the swollen late cicatrix pus-microbes in water, they are simply absorbed.

"In old cicatrices also containing particles of glass from rupture of glass capsules, cocci are absorbed without producing suppuration, even with intense infiltration and slower absorption. Cicatricial tissue is therefore not *locus minoris resistentiæ* for the pyo-cocci, on account of equal rapidity of absorption of the injected bacteria, as in late injured tissue; at least absorption is not notably retarded.

"The point of difficulty is to determine the power of resistance in injured tissue or in tissue changed by a cicatrix, towards the absorption of pathogenic pus microbes; the more rapid the resorption the less injurious are the bacteria. The active cellular infiltration, as an expression of the reaction of healthy tissue upon a traumatic injury, as it occurs in an encapsulated foreign body—irritation in the sense of Virchow's cellular pathology—exerts no predisposition for the development of bacteria, but is eminently opposed to it, inasmuch as it is Nature's most effective remedy for the successful combat against inimical parasites. We can therefore present the following: Subcutaneous injuries of a mechanical nature offer no predilection for the development of pus microbes existent *in loco* therein when, 1, the injury stimulates the absorption activity of the tissues; 2, that the mechanical irritation produces a cellular development—two conditions which are to be considered as defensive measures of the healthy organism in the battle of the cells against bacteria (phagocytes, Osler). It follows further, that the tissue lesion, which in this sense produce an inflammatory reaction, is not to be considered as a predisposing factor in the question of metastatic suppuration. But that a mechanical irritant can under certain circumstances produce a predominance of bacterial development, is well demonstrated in the experiments with the woolen threads,[2] that were saturated with the cocci. Nevertheless, this result in a certain sense emphasizes the previous statement; for the character of the suppuration evidences, that the resorptive power of the tissues and the active reparative qualities of cells was demonstrated, nevertheless, these pus microbes have had an opportunity of developing pus; and considering some of our other failures, it is to be explained, that the cocci contained in the meshes of the woolen thread occupied a relatively protected position against resorption and the cells, and experience such a rapid multiplication, that ptomaines may develop in the neighboring tissue before the foreign body is completely encapsuled. But the suppuration cannot develop further, because the active cell proliferation of the surroundings acts as an impenetrable barrier to the onward progress of the bacteria. These succumb gradually and are absorbed, in part by the leucocytes and partly by the pus globules, as shown by the cocci-containing pus globules. The pus corpuscles succumb to fatty degeneration. A mechanical irritation or lesion of the tissues containing pus microbes may suppurate when an irritant foreign body, located in the tissues, gives the cocci an opportunity to develop ptomaines, necessary to the establishment of the suppurative process; that the pus does not take upon itself a phlegmonous character, is explained by the factors shown in the previous experiments, which do not permit the evolution of the pus developing quality of the bacteria to manifest itself; through resorption, the protective cell development and the absence of oxygen, a battle, in fact, in which the bacteria always suffer.

"A further possibility for the origin of local suppuration is to be seen in the character of the manifestations after the application of an irritant, as in the impregnated woolen thread. Let us next consider the question of suppuration by chemical agents and its relation to the presence of bacteria. Inasmuch as ptomaines play such an important

[2] See experiments iv and v, Archiv. f. Klin. Chirurg., Vol. xxxix, No. 2, 1889, pp. 258, 259.

part in the suppurative process, and the importance which certain chemical substances, croton oil, ammoniac, have in the development of suppuration, under certain conditions without the aid of the bacteria, but above all, as they can in a definite concentration render the growth of existent bacteria easier in a fibro-mucous exudation, I consider it necessary to make some experiments to ascertain if a migration of microbes from other parts of the body occurred towards abscesses or inflammatory foci produced by chemical agents. 1. Inflammatory foci were produced in animals, dogs and cats, by injection of different chemical substances, nitrate of silver, lye, ammoniac, croton oil, cadaverin, etc. Immediately thereafter pure cultures of pus microbes were injected, (*a*), subcutaneously in remote parts of the body; (*b*), in the abdominal cavity; (*c*), in the blood current. In not a single case could these injected pyo-cocci be demonstrated in the chemical abscesses. Even in the development of diffused phlegmonous and ichorous centres with multiple decomposition bacteria of different varieties, could the migration of bacteria be determined in chemical abscesses, inflammation foci, if a separation of both points was sufficient. 2. Even though the experiment was reversed, if phlegmons and abscesses were primarily developed, and then chemical suppuration, the result was negative. 3. If, as a result of the chemical irritation, a cutaneous necrosis ensued, a migration of atmospheric bacteria frequently ensued, but a suppurative focus never manifested the presence of those cocci which were incorporated subcutaneously through the circulation or into the abdominal cavity. Simultaneously with croton oil, ammonia, cadaverin, pyococci were injected. In a few cases, intense phlegmons coincidental with a partial necrosis of the skin followed. Here both forms of microbes in large numbers were made evident. But more frequently intense cauterization ensued with diffused necrosis and rapid mummification. As a rule, cocci capable of life could not be demonstrated in these experiments. The migration of injected bacteria could not be determined in the inflammatory focus."

Whilst I believe, Mr. Chairman, the results of the experiments made by Dr. Rinne manifestly prove the position taken by thesis 29, and which I have endeavored to elucidate in the beginning of my remarks, before closing my part of the discussion, I desire to present the following few points which will be of interest: The author says: "From the experiments which I have detailed, I have shown that subcutaneous injuries of tissues with strong lye, nitrate of silver, or any of the other cauterant chemical groups, are not even then a *locus minoris resistentiæ* for pyococci, even though these chemicals in themselves produce suppuration when ammoniac or ptomaines are injected (syringe), they can, 1, produce abscess when injected in intense concentration; 2, they can prepare the soil when bacteria are injected with them; 3, they can render the entrance of bacteria possible when they produce necrosis of the skin, but they cannot open the inflammatory centre to the bacteria of the blood."

Let it be distinctly understood, however, that I do not dispute the possibility of concurrent or antecedent infectious diseases, or rather their causal factors derived from the atmosphere, exerting such a continued and persistent change in the general tissue, that they will create a *locus minoris resistantiæ* after a traumatism, provided this cell proliferation does not ensue. Nor will I deny the influence which the pneumococcus, gonococcus, streptococcus of rheumatism, erysipelococcus, or coccus of diphtheria or typhoid fever may exert upon the general organism and special localities through the agency of the lymph and blood currents. Sonnenschein, Grawitz, Cornil, Bates, E. von Hofman and many others have demonstrated this fact. Latterly Smirnoff, St. Petersburg, 1889, has developed this point in his microscopic examinations of the synovial fluid of the knee and shoulder-joint, taken from patients suffering from infectious diseases such as erysipelas, phlegmons, phthisis, typhus, diphtheria and gonorrhœa. But, though the pathogenic elements typical of these diseases were present in the fluid examined, he does not inform us *what* pathological changes were noted in the articulation from which the synovia was removed.

We must certainly insist that these specific infections must be made out, either by demonstrating their hereditary existence, or development a short period previously, before we can accept the view that these bacteria are responsible for almost all bone and joint suppurations. In order to be scientifically accurate, we must *establish the particular sort* by irrefutable evidence, and not assume upon theoretical statements that the differences in infective liability are to be sought in this peculiar fitness of the tissues for the reception of microörganisms.

Inasmuch, gentlemen, as our discussion refers particularly to the traumatic origin of periosteal or medullary inflammations, permit me to offer a few remarks upon this point.

Thesis No. 1 considers bone with its fibrous envelope an anatomical unit. Its histological study confirms this view. Yet, we know by abundant evidence that under certain circumstances, the osteogenetic properties of either may be exerted independently. It follows from this indisputable fact (subperiosteal resections, subperiosteal removal of individual bones), that the views of Macewen are somewhat overdrawn. Yet if we study its clinical phenomena, we are confronted with the interdependence of the bone proper and the periosteum. Thus, it is simply a matter of time, when a periosteal inflammation will be combined with an osteomyelitis, and *vice*

versa. But, the early interference of the surgeon can and does interfere with this ultimate connection.

Could I offer a better proof of the traumatic origin of periostitis in a large number of cases than the results of treatment? Bryant has placed in bold relief the *influence of tension* on inflammatory affections, and *has demonstrated the immediate relief* of inflammatory phenomena, after such tension has been removed. *We are all acquainted with* the prompt results derived from the surgical treatment of both osteomyelitis and periostitis. *Subcutaneous division of the inflamed periosteum* almost invariably leads to the cessation of the inflammatory process. If this is not done, *suppuration with destruction of bone ensues*. And what have been the results of treatment in osteomyelitis; of malaria; typhoid fever; exposure to damp cold—has not the relief of intra-osseous tension curtailed, even estopped the pathological process! and will the microbists assert that the well-known virulence and power of tissue penetration of bacteria is prevented by allowing the escape of a few drops of pus or blood?

And how do the microbists explain the origin and recurrence of "The Multiple Recurring Bone Inflammation Common to Mother of Pearl Workers," as described by English (*Wiener Med. Presse*, 1869, *Wiener Med. Wochensch.*, 1870) and Gussenbauer (*Archiv. f. Klin. Chirurg.*, Bd. 18, 1875). Will they accept this pathological condition on the basis of the possibility of "pearl dust" being deposited in the pulmonary parenchyma and, after undergoing some changes, are found as small emboli in the osseous vessels. Or will they accept the assumed, and to me far-fetched, microbic view of Dr. J. Decker (*Berl. Klin. Woch.*, November 11, 1889, p. 975), of Munich?

Permit me to close my remarks with the question: Has it been absolutely proven, that microbes are not scavengers merely?

517 Pine Street, St. Louis.

MEDICAL PROGRESS.

THE THERAPEUTICAL APPLICATION OF OXYGEN.—V. VON GYURKOVECHKY. According to this author, inhalations of oxygen are indicated where there is acute or chronic saturation of the blood with carbolic acid; he also recommends its use for imperfect oxygenation in cases of physical weakness, anæmia, leucæmia, chlorosis, indigestion, ennervating nervous diseases, diabetes, hemicrania, sleeplessness, and impotence. The oxygen used must be pure; the quantity to be inhaled depends upon individual peculiarities and the character of the disease, and varies from 10–30 litres per day. Old people require less than the young; the enfeebled less than the strong. The best time for its administration is before breakfast or before the other meals. Accidents have never been observed by the author. Hæmoptysis and aortic aneurism contraindicates its use.—*Cent. für Klin. Med.*

LABOR COMPLICATED BY AN OVARIAN TUMOR.—In the Gynecological Society of Dresden, MUNCHMEYER reported the case of a multipara 30 years of age, who was admitted to the hospital during labor. An examination revealed a remarkably high position of the head caused by the presence of a large firm tumor which really filled the true pelvis. Attempts at reposition failed; puncture resulted only in the escape of a little fluid blood, the tumor showing no disposition to diminish in size. After death of the child delivery was accomplished by perforating and using the cranioclost, the latter being introduced through an os dilated only to the size of a dollar. For four weeks after labor the tumor, which was connected with the left ovary, remained unchanged, and then began to decrease in size. Ovariotomy was performed and the tumor found to be a spindle-celled sarcoma of the left ovary. The patient made a good recovery and was discharged in three weeks. The points of interest in this case are the extraordinary swelling of the tumor shortly before labor, and the lack of any special symptoms in spite of its malignant character.—*Cent. für Gyn.*

TREATMENT OF ANTHRAX BY HYPODERMIC INJECTIONS OF CARBOLIC ACID.—DR. DANET reports four cases of anthrax cured by the hypodermic injection of glyco-phenic acid. The solution was employed in the strength of 3 per cent. of which 4 to 5 cubic centimetres was employed, this amount being injected at several points, and 1 cubic centimetre being introduced through each puncture.—*Journ. de Méd. de Paris.*

INSOLUBILITY OF COMPESSED TABLETS.—The case of a boy, æt. 8 years, is reported, in which compressed tablets of antipyrin containing 0.5 grm. each were administered for fever; the tablets passed through the intestinal canal unaltered. In a similar manner compressed tablets of phenacetin containing the same amount were given to a boy of 10 years for neuralgia; these two were discharged undissolved.—*Corres. für Schw. Aerzte.*

CAFFEIN IN ADYNAMIA.—HUCHARD recommends large subcutaneous injections of caffein as a valuable remedy in adynamic conditions particularly as its action, contrary to that of digitalis, is first upon the nervous system and then upon the heart. He employs from 2.0 to 3.0 grm. per day and finds that it can be given with the best results while the benefit of a daily dose of 0.2 to 0.5 grm. is illusory.

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SATURDAY, MAY 17, 1890.

A FUNCTION OF DOGMA.

"You are the most dogmatic man of my acquaintance!" In the course of a heated discussion, not very long ago, this remark was addressed by a distinguished medical man apparently to his opponent. Probably, the words were really aimed at the other members of the Society, with a view to discredit his antagonist, whose argument, possibly from inability, the speaker did not attempt to refute. Plainly the remark is a typical example of the *argumentum ad hominem*, an instance of that material fallacy, recognized by all logicians from ARISTOTLE down to ARCHBISHOP WHATELY, as the irrelevant conclusion. Technically this fallacy is called *ignoratio elenchi*, or literally ignorance of the refutation, and the name indicates clearly its use in sophistry. It is the great resource of those that have to support a weak case. Some lawyers are familiar with it, as in the case of the English attorney for the defendant, who is said to have handed to the barrister his brief marked, "No case; abuse the plaintiff's attorney." Among scientific men, however, honesty is ever at a premium, and all such quirks and quibbles are apt to be promptly detected and condignly punished. Simply on the ground of expediency, therefore, if from no loftier motive, this sophism is seldom employed in medical discussion.

For the purpose of this note, the truth of the allegation in the case cited may be conceded, but the admission does not necessarily discredit the opponent. Dogma—"A peremptory opinion, a formally stated and authoritatively settled doctrine, resting on what is regarded as competent to decide and determine"—plays, has always played, and will continue to play a rôle in the evolution of the science of medicine as essential as that in theology and metaphysics. To be sure the adjective, "dogmatic," is commonly suggestive of the unpleasant notion of positive, overbearing, arrogant assertion, which is fully justified neither by etymology nor by best usage. PROFESSOR C.C. EVERETT, in the December number of *The Forum*, contributes a thoughtful paper on "The Natural History of Dogma," which, while outlining more especially the function of dogma in theology, still is germane to the subject in hand. Most of his conclusions can be applied with but slight modification to the function of dogma in medicine.

The origin of dogma is to be sought first in effort of the mind to arrive at truth, to establish proof. But "proof, by its very nature, implies that which is unproved, and, in the final analysis, that which cannot be proved. An argument which is based on no assumption is as useless, for all purposes of support, as a chain that is fixed to no staple. If we prove the assumption upon which any one line of reasoning rests, it must be because we have found another behind it. An endless chain of reasoning, that is, one that is all links with no fixed point anywhere, is an idle dream." In the same strain, HUXLEY has said that every science must proceed with the enlightened conviction that ultimate fixity of conception is here unattainable.

"Further, in very few cases do any of us go back to the primary assumptions of the mind. Our belief, in most cases, rests upon such ready-made assumptions as our social environment offers us." These assumptions and inherited methods of thought constitute what Professor Everett calls "the irrational activity of the mind," and thus imply a dependence upon the past, that some of the moderns are disposed to resent. This resentment, of course, is all the more unreasonable since "the fact that every age has a set of more or less definite opinions and presumptions ready for its children, is" the condition that "makes progress possible."

The second factor in the origin of dogma is the "strictly rational activity" of the mind. "Human reason is unwilling to let anything rest in its separateness. It is fundamentally a systematizer. It will see everything in relation to every-

thing else. Thought tends to globe itself, no less than a drop of quicksilver. Any thought that is introduced into the mind seeks to find or to make a place for itself. If it can do neither, it passes away, leaving no impress from its brief presence."

Conditioned thus in development, it is obvious that the "same influences which produced" dogmas tend at last to bring about their dissolution. Of course we must except those cases in which the doctrines, passing the limits of probable evidence, ultimately obtain a basis upon facts capable of objective demonstration. Fortunately such instances in the history of medicine are not uncommon, and they are daily increasing in number. To follow Prof. Everett's plan, to illustrate and to apply these general principles, no more striking example could be selected than the doctrine of the infectious wound diseases.

At the present time, and especially in our own country, it appears to us, there exists a tendency, more manifest in some departments than in others, to "count it a bondage to fix a belief, affecting free will in thinking as well as in acting; and though the sects of philosophers of that kind be gone, yet there remain certain discoursing wits which are of the same veins, though there be not so much blood in them as was in those of the ancients."

This tendency plainly indicates a neglect to employ "the strictly rational activity of the mind" which, we have seen, constitutes such an important function of dogma. Take, for example, the doctrines of "eclampsia" and of "placenta prævia," the two most fearful complications of gestation, as presented in our text-books and journal literature. We venture the assertion, without fear of contradiction, that the accounts of the pathology and treatment of these two conditions in our text-books and journal literature are inadequate, and that they reflect inaccurately the world's actual stock of knowledge. The cause of this tendency, we think, does not consist so much in "a natural, though corrupt love of the lie itself," for, as before remarked, medical men are honest, if anything; but, rather, in the "difficulty and labor" which men must needs take in finding out the truth. No one will deny that medical men are sometimes lazy when it comes to reading, study and reflection. Possibly also the second-hand character of our information, derived, as it is for the most part, from German sources, may be at the root of this unwholesome agnosticism, that is destitute of all power and virility.

A MUNIFICENT PROPOSAL.

At the annual meeting of the Illinois State Medical Society, held in Chicago May 6–9, 1890, MR. WM. F. POOLE, Librarian, representing the trustees of the Newberry Library, was introduced to the audience, and in a short and effective address, expressed the purpose of the trustees, with reference to a medical library.

In the construction af the library building one Section will be devoted exclusively to medicine. It is their intention to place in that department a library so complete as to meet, as far as possible, the wants of all who wish to consult medical authorities. They will also keep constantly on file, as they are issued, the current numbers of all prominent medical journals published in this, and in foreign countries.

They invite the members of the Society to suggest the names of any books, or series of books, that they may deem desirable, and, as far as practicable, such additions to the library will be made. In short, it is their purpose to develop a Reference Library so complete that whatever authorities medical men may desire to consult they may here be found.

When it is remembered that this institution has at command two millions of dollars, and that as trustees superior men could not be named, and that it commands a librarian of world-wide reputation, it is at once apparent that its trustees could pay to the medical profession no higher compliment. The City of the Lakes is unspeakably fortunate, in that it will thus be able to furnish to the profession a library which can, to the utmost, supply the needs of literary and scientific workers in every department of medical investigation. Private reading rooms and every facility for reference will be afforded free of charge.

THE INSANE POOR AS A STATE CHARGE.

The New York State enactment regarding pauper lunatics has recently been signed by the Governor, and will probably greatly ameliorate the condition of those insane persons who have hitherto been regarded as county charges, and whose treatment has been practically the same as

that given to paupers. The effects of the bill will be, first, to establish the policy of State care and State support for all the insane who are, or who may hereafter, become a public charge; second, that it destroys the pernicious legal discrimination between the chronic and acute insane, and third, that it provides for the removal of all the insane from the county poorhouses, and forbids their detention in these places when the State shall have made accommodations large enough to take them all in. For the present, the State hospitals for the insane will not be sufficient for all the county charges, and must be enlarged at once. This humane law has been beaten three times before, but each year it showed a greater and greater strength until the present session, when its opponents were able to make only a show of resistance to its adoption.

THE ANTISEPTIC TIN DRESSING FOR CHRONIC ULCERS OF THE LEG.

The last report of the Boston City Hospital contains an account of the tin dressing for ulcers of the leg, used by Dr. Francis S. Watson, at that institution. The ulcer and surrounding surface are soaked in a solution of corrosive sublimate, one part to 4,000, for ten to fifteen minutes. The surface about the ulcer is then dried and thoroughly cleansed, the ulcer itself being lightly dusted with calomel or iodoform. A piece of protective of Mackintosh cloth is then cut out, of the shape of the ulcer, and in size a little larger, covering a little more than the surface of the ulcer. Next a piece of sheet-tin is cut to the shape and size of the ulcer, and bent to fit smoothly the curve and contour of the leg at this point. This is laid over the protective after that has been laid on the ulcer with as smooth a surface as possible, in order that, when the time comes to change the dressing, it can be lifted off without tearing up the newly formed tissues beneath it. Over the tin is placed a square of sterilized or sublimated gauze, dry, and outside of this a larger square of antiseptic gauze of some kind, enveloping the leg; then the whole is held in place by a bandage extending from the toes to the knee.

Prof. Theirsch, of Leipzig, has been chosen President of the next Congress of German Physicians.

EDITORIAL NOTES.

HOME.

The Next Place of Meeting.—Several cities were named at the last annual meeting, each of which seemed a desirable one for a meeting of the Association. Within the last few weeks there has been a strong movement on the part of our Omaha friends to secure the meeting of 1891 in that city. With reference to accommodations we are confident that the citizens of Omaha and Council Bluffs, in a combined effort, would be able to meet every requirement in a right royal manner. But the question of location is the one to be more seriously considered. Will the Pacific States be more fully represented at Omaha than at some prominent point farther east? If not—secondly, will the distance be a bar to a full attendance of delegates from the Atlantic, the Eastern-Middle, and the Southern States? If so the location would be unfortunate, not as to matters of entertainment but as regards the number in attendance. The place in which the most physicians will congregate is the desirable location for our next meeting.

Illinois State Medical Society.—The officers elected for the ensuing year are as follows: President, J. P. Mathews, Carlinville; First Vice-President, C. C. Hunt, Dixon; Second Vice-President, F. C. Schaefer, Chicago; Treasurer, T. McIlvane, Peoria; Assistant Secretary, George N. Kreider, Springfield. The next annual meeting will be held in Springfield, commencing the third Tuesday in May, 1891.

A New Hospital is to be built and maintained in Sioux City, Iowa. Thus, one by one, our Western States are taking active measures to meet the sanitary needs of their rapidly growing populations.

Scientific Achievements.—A high order of talent combined with special culture is absolutely essential to the proper development of the scientific questions which present themselves for investigation at the present hour and in the immediate future. The field of microscopy, comparatively new, presents its claims with imperative demands. In the lines of microscopic investigations there seems hardly to be a limit to the possibility of new achievements as signal as those already attained, and, doubtless, more so. In the application of electricity as a therapeutic agent

we are as yet but in the beginning of our investigations, and the successes already attained forbid that we should rest content with what is known only in part. The application of electricity in phonography is not a curiosity merely, but is already a marvel of utility. Not only may the utterances of men be treasured up for future uses, but the vocal intonations with which they were delivered are to be preserved as well. In the meeting of the Association to be held at Nashville one of the Addresses in the Section on Medicine has already been recorded upon a little cylinder, and will be reproduced as audible as when first delivered, the author himself being a thousand miles away.

THE CHICAGO MEDICAL COLLEGE.—In connection with the Illinois College of Pharmacy the Chicago Medical College, the Medical Department of the Northwestern University, is making active preparations for the erection of new and commodious buildings, which shall afford to each of the institutions thus associated increased facilities for instruction. Desirable lots have already been secured on the corner of Twenty-fifth and Dearborn streets, and the work of construction will be pushed rapidly forward to completion.

ANNUAL REPORTS OF THE ILLINOIS STATE BOARD OF HEALTH.—Licentiates of the Board can obtain copies of the Ninth and Tenth Annual Reports, also the Report on Medical Education and Medical Colleges, by applying to the Secretary, John H. Rauch, M.D., Springfield, Ill.

THE ASSOCIATION AND THE PACIFIC COAST.—We are advised that Dr. Winslow Anderson, Editor and Publisher of the *Pacific Medical Journal*, who is a delegate from his State to the meeting of the Association at Nashville, is instructed by the State Medical Society of California to present its compliments to the Association and to urge that the next annual meeting be held in the City of San Francisco. That city has now a population of over three hundred thousand people, with over three hundred physicians in active practice in affiliation with the Association.

The contiguous States and Territories of Washington, Oregon, Nevada and Arizona are representative of over three thousand physicians, and it is confidently represented that from twelve to fifteen hundred of them would be in attendance from the coast alone. The Association, National in its character, should be National in its outreaching, and it owes to California the acceptance of such a generous invitation in the near future. Perhaps the fitting time for acceptance is now!

LEPROSY.—A single case of leprosy is reported in Mississippi. The State Board of Health will doubtless give the case their especial attention.

FOREIGN.

DEATH-RATE AND MORTALITY OF INFANTS IN JAPAN.—A correspondent of the *British Medical Journal* says that the death-rate of the population of the whole Empire, as gathered from the well edited reports of Mr. N. Sensai, the able chief of the statistical health bureau, is 19.33 per 1,000, due to the low infant mortality. The Japanese have the most tender affection for their children; and all travelers are agreed that next to the beauty of the scenery and the gentle and graceful courtesy of all classes of the population, ranks as among the most pleasurable incidents of sojourn in Japan, the universal love of children and the amiable gaiety with which their pleasures are studied.

AT THE SURGICAL CONGRESS recently held at Berlin, it was announced that the German Emperor had contributed 100,000 marks (£5,000) towards the new Langenbeck Institution, which is to be the general home of the medical societies of the Prussian capital.

THE PNEUMATOSCOPE.—At the meeting of the Vienna Medical Society on February 26, Dr. Gabritschewski, a Privat Docent, of Moscow, exhibited an instrument invented by himself called a pneumatoscope. It consists of two funnels inverted into each other, and two tubes provided with two end-pieces which the examining physician applies to his ears. The inverted funnel is covered with a light vibrating membrane of india-rubber, and is placed on the patient's mouth so that he breaths into it. According to the inventor his discovery will effect a revolution in thoracic examinations. He has used it very successfully in the diagnosis of chest affections. The sound-waves permit a more accurate differential diagnosis as different breath-tones were produced in the different diseases. The instrument can also be made use of in examining the breast.

TOPICS OF THE WEEK.

MEDICAL VIEW OF DRUNKENNESS.

A very interesting and important question was discussed the other evening at a meeting of the Police Surgeons' Association held at St. Thomas' Hospital, Mr. McIlwraith having called their attention to the difficulty of defining the condition indicated by the term "drunkenness," and the uncertainty as to a man's responsibility for actions committed while drunk. Strangely enough, the question was represented, even by an intelligent public writer, as a semi-comic one. It is far from comic, as no one knows better than a police surgeon. No one sees so much as he of the infinite complications which beset cases in which injury, exhaustion, and disease are mixed up with alcoholic poisoning in its various grades, so as sometimes to baffle all ordinary powers of diagnosis. But apart from these more difficult cases (which, however, are of very common occurrence), the everyday question for the police, "When is a man to be called drunk?" is one which becomes the more puzzling the more it is studied, and it is one which recent police legislation has made it incumbent on medical men to answer, since now everyone charged at a metropolitan police station with being "drunk and disorderly" has a right to summon a medical man to pronounce on his sobriety; and of course in all cases where there is any reason to believe that a person is seriously ill, whether he be thought to be drunk or no, medical aid is at once summoned to decide the question. There seems to be no particular reason for making the mere question of sobriety a medical one, since no definition of drunkenness appears to have been attempted by writers on medical jurisprudence; but, since it has been so ordered by the authorities, it behoves the surgeons called by the police to have as clear ideas on the subject as circumstances permit. To this end, as it seems to us, the recent discussion will very materially contribute, and we would call especial attention to the following very practical and useful observations of one of the divisional surgeons.

Dr. Forsyth said "the term 'drunk' was applied to any case in which alcohol was supposed to be a factor, and he thought it was necessary that they should differentiate between the various states. He objected to the indefinite expression being so easily used and so easily accepted, and urged that drunkenness should be treated under at least three aspects—excitement, loss of control, and coma, and that in all cases where persons were charged with being drunk the magistrate should require a qualifying definition to be given, and should also demand the reasons of those making the charge for attributing the condition of the prisoner to alcohol. He would also insist upon a man who was unconscious from drink being in all cases treated as being in as great danger as an apoplectic patient, for one was in as great danger as the other. If this were done, the heading 'Drunk or Dying' would disappear from the newspaper reports."

It is obviously in some such rational discrimination of the various conditions produced by alcohol, as is here indicated, that safety is to be found for the liberties and lives of persons who are, or who are suspected of being, "drunk," and we congratulate the police surgeons on having taken up so interesting and so important a subject, and of having treated it in a way so likely to result in benefit to the public. Other useful remarks on diagnosis were made during the discussion, such as the following by Mr. Phillips:

Dealing with the tests for drunkenness, he pointed out that "when the brain was poisoned by alcohol the pupils of both eyes were contracted alike, whereas in apoplexy it was noted in one or the other according as the effusion of blood affected one portion or another of the brain."

The Association is one capable of rendering much service to medical science, for many interesting points are copiously illustrated in police practice, which but rarely come before the general practitioner, and we are therefore glad to see that they are likely to be treated wisely and usefully by the newly formed Society.—Editorial, *Brit. Med. Jour.*

"COLLES' LAW."

One of the most important of all pathological facts is the transmission of syphilis from father to child without infection of the mother. Many men aware of this fact, and already victims of syphilis, hesitate to marry, almost entirely on account of their future offspring rather than their future wives. The extinction of syphilitic virus in well-fed patients is one reason why the disease is not often seen in its hereditary form in children among the prosperous classes of society, as Paget has had occasion to observe. The immunity of the mother is a question which deserves the closest investigation. According to a well-known law first laid down by Colles, and afterwards confirmed by Baumès, a mother who suckles her syphilitic child never thereby acquires syphilis. Diday, Jonathan Hutchinson, and others have established this law; and the exceptions are so few as almost to prove the rule, if not themselves "suspect." Dr. L. Merz has published notes of two exceptions in the *Archives de Tocologie* for January. He notes two cases where the law was strikingly confirmed. In one, the child of a syphilitic father was suckled for three months by its mother. As it then was covered with a specific eruption, the mother, believing her milk to be bad, employed a wet nurse. The latter became infected within six weeks, an indurated chancre appearing on one nipple. The mother remained healthy.

The first exception to Colles' law was noted by Tommasi-Crudeli in the *Instituzioni di Anatomia Patologica*, Turin, 1882.

In the second case, under the observation of Dr. L. Merz himself, the father was clearly syphilitic, and the mother free from venereal disease when a child was born. She suckled her infant, which soon showed unmistakable signs of congenital syphilis, mucous patches appearing on the lips. The mother as well as the child was submitted to specific treatment. Nevertheless a chancre formed on a fissure in the left nipple, and it was followed by roseola, mucous patches on the buccal mucous membrane, and alopecia. The supply of milk did not fail, and the mother was able to suckle the child. Both

made a good recovery. Dr. Merz attempts to explain Colles' law and its exceptions. The law, he believes, is based on the fact that the mother is generally inoculated by her unborn child. The degree of inoculation may, however, vary. In most cases it is subtle, yet so thorough as to guarantee the mother both against that severe yet chronic train of symptoms which constitute syphilis, and against infection through her child at the breast. In some cases it is sufficiently severe to infect the mother during pregnancy, as has been repeatedly observed. Lastly the infection, instead of being severe or medium, may be insufficient. The mother is not protected against infection during lactation. This would account for such cases as that reported by Dr. Merz. Immunity through soundness of the nipple or healthiness of the infant's mouth could never explain Colles' law; for sore nipple is a very common disorder, the mouth is very often attacked in congenital syphilis, and in cases where the law is proven it is the nipple of the wet nurse that is usually the seat of the chancre.—*British Med. Journal.*

THE DURATION OF PREGNANCY.

The science of obstetrics is remarkable for the real complexity of some of its most essential problems, which all at first sight bear the stamp of simplicity. We find men of experience mistaking a gravid uterus for a tumor. Very recently several obstetrical veterans publicly declared at a meeting of a London society that the position of the placenta could be diagnosed by palpation, upon which some other obstetricians of equal authority declared that it was impossible to ascertain the position of the placenta by palpation. Another subject of high interest to men and women in general is the precise time within the menstrual cycle at which impregnation is most probable, some writers implying, or laying down, a physico-ethical law that impregnation is natural only at that precise time. Closely associated with this subject is another question, the duration of pregnancy. The theme is treated with ability by Dr. A. R. Graham in a short but important contribution to the new volume of the "St. Bartholomew's Hospital Reports." His figures tend to show that considerably more labors occur in fewer than in more than 280 days from the cessation of menstruation, but that over 300 days is not a rarely recorded period. He can find no direct confirmation of the view that the length of the pregnancy depends partly upon the sex of the fœtus. Dr. Graham's observations on the time in relation to the period at which pregnancy commonly commences, deserve the attention of obstetricians and practitioners.

STATE MEDICINE IN ITALY.

Important innovations have just taken effect in Italy for the official surveillance and control of medical institutions and health resorts. Every prefect throughout the peninsula has received from the Government a circular, in which he is authorized to permit the opening of any medico-chirurgical infirmary, maternity hospital, or hydropathic or thermal establishment, only on condition that his sanction has first been asked and obtained. The object of Government in enforcing this regulation is to secure a guarantee in which the public can have confidence that these institutions, whether already established or recently set on foot, correspond exactly to their avowed purpose and are justly chargeable with no defect in their hygienic condition or administration. Another salutary innovation is the practical examination and certifying of professed midwives in town and country. In any centre of population, rural or urban, in which these functionaries are found inadequate, in point of qualification or of number, to the service of the community, the Government shall at once, through the local sanitary authority, take steps to make good the defect.

MUSCULAR ATROPHY IN TABES DORSALIS.

Dejerine (*Revue de Médecine*, 1889) has made an elaborate study of those forms of muscular wasting which accompany tabes dorsalis. Wasting is most common in the hands and feet. The interossei are the most affected, and that gives either the foot or the hand a claw-like aspect. Atrophy of other muscles leads later to pes equinus or pes equino-varus. Contraction of the muscles may lead to a loss of the capability for passive movement. The muscular atrophy is almost always symmetrical on the two sides of the body. There are no changes in the anterior cornual cells, but the nerves to the muscles are degenerated. The degeneration is most marked nearest to the muscle, and gradually decreases in intensity as it is traced upwards; only occasionally does it reach as far as the anterior nerve roots. The muscular fibres are simply atrophied without any increase of interstitial tissue.

NEW METHOD OF EXAMINING NERVOUS TISSUES IN THE FRESH STATE.

Kronthal (*Neurologisches Centralblatt*, No. 2, 1890) has described a method for examining in a fresh state the microscopical characters of the central nervous system. A piece—about as big as a pin's head—of brain or spinal cord, as the case may be, should be taken quite fresh and placed upon the object-glass. It is then covered with a cover-glass and pressed out flat. A drop of a 0.5 per cent. solution of methyl blue is placed at the edge of the cover-glass, which is raised to let the stain run in. After from thirty seconds to a minute the superfluous stain is removed with blotting-paper. The cover-glass is then raised. The preparation is allowed to dry in the air; this takes five or ten minutes. A drop of Canada balsam is then added, and the preparation is ready for examination.—*British Medical Journal.*

AN ALBUM FOR PASTEUR.

The *Semaine Médicale* reports that a committee, composed of British and American notabilities, has been formed to offer an album to M. Pasteur. The first page of this album bears, in French, under the signature of the Princess of Wales, the following inscription: "To the Great Monsieur Pasteur, the Benefactor of the human race."

SOCIETY PROCEEDINGS.

The Illinois State Medical Society.

Fortieth Annual Meeting held in Chicago, Illinois, May 6, 7, and 8, 1890.

FIRST DAY—MORNING SESSION.

THE PRESIDENT, DR. JOHN WRIGHT, OF CLINTON, IN THE CHAIR.

The Address of Welcome in behalf of the local profession was delivered by Dr. Norman Bridge, the response to which was made by Dr. T. J. Pitner, of Jacksonville.

DR. C. W. EARL, of Chicago, then presented the report of the Committee of Arrangements, which was a very elaborate and attractive one.

DR. J. M. G. CARTER, of Waukegan, Chairman of the Committee on the Practice of Medicine, read a paper on

THE CAUSES AND TREATMENT OF PNEUMONIA,

in which he said the question of etiology has given rise to considerable discussion, and in many minds, to doubt. Six different varieties of bacteria had been mentioned by Bremmer as causing this disease, and others had been mentioned by later writers. The diplococcus of Fränkel had lately been shown to be present in most cases of pneumonia, especially croupous pneumonia. Wolff found it in 94 per cent. of the cases examined by him. Baumgarten thinks it is safe to assume a single sole cause for pneumonia. In Wolff's cases verification was established by cultures in more than half the cases. Monti examined the exuded fluid in twenty cases with but one negative result. Sometimes the Fränkel diplococcus was found in company with other bacteria. In these cases of Monti, Friedländer's micrococcus was not seen. Inoculation of fifty-nine rabbits, while universally successful, produced typical pneumonia only when the sputum was introduced into the trachea. Inoculation under the skin produced septicæmia; into the pleura, pleurisy; into the pericardium, pericarditis. Inoculation of the dura mater of a dog produced meningitis and lobar pneumonia. Fränkel, Foa, Whittaker and others have shown that the cause of pneumonia is not confined to the lungs, but invades other organs and tissues. Weichselbaum, Netter, Mircoli and others, have found the diplococcus after pneumonia in the ventricles of the brain, connective tissue of the mediastinum, the jugulum, above the clavicle, behind the œsophagus, in cavities about the nose, in the drum cavity and labyrinth of the ear. Tomasi, Golgi and others believe pneumonia to be caused sometimes by malarial poison, and this view corresponds with that of physicians in the southern part of Illinois and other malarial districts in the United States, where this form of the disease is called "winter fever."

Dr. Carter said it must be admitted that the cause of pneumonia is not fully settled by the profession. It has not been proved that the bacillus is not a concomitant rather than a cause of the disease.

In the present state of our knowledge, the following indications for the treatment are clear: 1. To equalize the circulation and diminish the determination of blood to the lungs. 2. To reduce the temperature of the body. 3. To sustain the patient's strength. 4. To assist the mucous membranes and organs of secretion and excretion in the performance of their functions. 5. To allay pain. Petresco says digitalis may check pneumonia at the outset. It is of value in æsthenic cases and when the heart is weak. Dr. Carter had not been favorably impressed with antipyrin, nor with antifebrin, and of late had not given them. Quinine is usually serviceable, and in malarial cases, essential, not only to reduce temperature, but also as a germicide and antiperiodic. Liebermeister advises blood-letting when there is œdema of the lungs, but Dr. Carter believes this may be avoided by blistering and the use of digitalis. Bruckner has reported over seventy cases treated with tartar emetic with great success.

Dr. Carter regretted that there is no well appointed laboratory for microscopical and physiological research in Chicago.

DR. G. FRANK LYDSTON, of Chicago, read a volunteer paper entitled

THE RELATION OF EVOLUTION TO THE PROBLEM OF INFECTIOUS DISEASES.

He said much of the medical progress for several decades past has consisted in the isolation and differentiation of contagious diseases, and their classification as specific entities. Dr. G. DeGorrequer Griffith, of London, England, published, several years ago, a theory of the unity of poison, which implied that certain contagious diseases were identical in origin, and that their poisons could be developed through certain changes, of a chemical character, occurring in organic matter. Thus he recognizes two forms of scarlatina: (1) That contracted from a scarlatina patient, or through the medium of something that has been in contact or in communication with him; (2) that which has generated *de novo* from blood poison, such as occurs in puerperal patients and in surgical cases (the "surgical scarlatina" of Paget), from deleterious matters absorbed or otherwise passed into the blood and thence into the tissues of the body; or from noxious drains and sewers, or the ingestion of pernicious articles of drink or food, such as tainted water, milk, cream, decomposing animal or vegetable substances. We have by evolution the spontaneous

generation of so-called specific poisons. Dr. Lydston does not hold that the germs themselves are spontaneously developed, for while such an event is perhaps possible, it is as yet disputed by the best scientific authorities. He claims that the poison of disease may be developed by the evolution and acquirement of new and toxic properties by germs which were primarily innocuous.

The local venereal diseases, and in this category he included not only gonorrhœa and chancroid, but their congeners, such as herpes, balanitis, simple urethritis, etc., are among the best illustrations that we have of the poisons of infectious disease. The idea that gonorrhœa and chancroid are diseases which have been inseparable from the human species is certainly untenable. The origin of gonorrhœa and chancroid must necessarily be the same, if the evolutionary theory of their origin be correct.

The conditions which modify the results of the virus generated *de novo* in the human vagina are: (1) The age of the decomposition; (2) the degree of inflammation present; (3) the frequency of coitus; (4) the character of any semen or urethral discharges which may be deposited in the vagina; (5) the degree of cleanliness of the woman; (6) amount and degree of virulency of the virus deposited upon the absorbent surface in another individual; (7) the cleanliness, local and constitutional condition, habits and sexual hygiene of the recipient of the cultivated virus; (8) individual predisposition.

AFTERNOON SESSION.

DR. W. O. ENSIGN, of Rutland, as soon as the Society had reconvened, took the chair, and President Wright proceeded to deliver his annual address, in which he advised the formation of country and district medical societies, and the coöperation of physicians throughout the State.

DR. WRIGHT then attacked the liquor traffic, and said that the State Board of Health should revoke the certificate of every physician known to use alcoholic liquor as a beverage.

DR. J. H. WALLACE, of Monmouth, contributed a paper entitled

DIAGNOSIS OF TYPHOID FEVER,

in which he first protested against the common custom of calling all cases of continued fever typhoid. To be of practical importance to the patient our diagnosis must be based on the careful study and examination of the symptoms presented during life, and not on the phenomena observed after death. There are certain symptoms in common in all cases of typhoid fever. Thus, Dr. N. S. Davis says: "In classing all cases of continued fever under the head of typhoid and typhus physicians ignore some of the plainest facts of clinical experience, and place in the same group cases essentially different in causation, symptoms and pathological results. It remains, therefore, for us to detect minute differences."

The onset in typhoid fever, continued Dr. Wallace, is more gradual than that of any other fever, coming on insidiously and with premonitory symptoms. There is not that uniformity in the origin of typhoid fever which is found in intermittent, remittent and yellow fevers, where we can give name to the cause and study the law of its diffusion. Cases of typhoid are met with at all seasons of the year, in all climates and in all portions of the habitable globe, and amongst all varieties and nationalities of people. Two things are necessary to bring about a case of typhoid fever: (1) The poison; (2) the person liable to be poisoned. In all cases of suspicious typhoid fever an examination of the urine should be made, as Bright's disease, abscess of the kidneys, with blood poisoning, occasions a deceptive likeness to typhoid fever. Wilson says that the most marked changes in the secretions from the kidneys is found to be interstitial or diffuse nephritis, probably of septic origin. Dunn regards our present knowledge inadequate to the solution of the question as to the part played by microörganic ferments in the causation of the disease. One of Da Costa's diagnostic indications is the duration of the fever, he asserting that it lasts fully three weeks, and very frequently much longer.

The next thing in order was the report of the Special Committee on Diseases of Children.

DR. KATHARINE MILLER, of Lincoln, read a paper on

VAGINAL IRRITATION AS A CAUSE OF BLADDER SYMPTOMS IN YOUNG GIRLS.

More common even than enuresis among girls is a form of irritability of the bladder manifesting itself chiefly in an inability to retain the urine in a normal manner. It is often complained of in school-girls, who are obliged to leave the schoolroom even between intermissions in order to pass the urine, else the bladder, spasmodically contracting, empties itself in spite of every effort of restraint. Even with the promptest attention to its demands these girls are occasionally subjected to the mortification of wetting their clothing. Oftentimes no complaint is made of any other symptom than this annoying vesical irritability. The condition is more common at the age of 6 to 12 or 14 years, but may, if untreated, persist indefinitely. Examination reveals an extremely sensitive and hyperæmic condition about the vaginal orifice, and further investigation will show the extension of this tenderness within the vagina. Often this latter investigation can only be made by the use of an anæsthetic, not only because of the small size of the parts, but because of their extreme sensitiveness. Whatever the cause, the treatment must be directed to the removal of the vaginitis, when the bladder will

recover its tone. Cleanliness must be enjoined. Not only is careful washing needful, but warm hip baths are of value. Soothing powders must be dusted on, the vulva being opened as far as possible, and children old enough to understand the aims of the procedure will generally submit to the application at night of a small pledget of absorbent cotton wet with a healing lotion containing pinus canadensis, hamamelis, carbolic acid or similar remedy, diluted with thin boiled starch. Where the urine is normal, rhus aromatica has proved a valuable aid in controlling the habit of irritability of the bladder and relieving the symptoms till the cause can be removed.

Dr. Robert Tilley, of Chicago, read a paper on

FOUR CASES OF DISEASE OF THE MASTOID,

in which he said that Barker, of London, in a study of abscesses of the brain, states that three-fourths of the abscesses of the brain are in the temporo-sphenoidal lobes, and that nine-tenths of subdural abscesses are found in a circle 1½ inch in diameter with its centre 1¼ inch behind and 1¼ inch above the centre of the bony auditory meatus. It might be further said, remarked Dr. Tilley, that nearly all these abscesses originate from some disturbance in some part of the external auditory meatus. As long as facts substantiate this statement, the study of mastoid affections will not cease to be interesting.

The Report of the Committee on Revision of the Constitution was called for, and was presented by the Chairman, Dr. Thomas M. McIlvaine, of Peoria. The report embraced several changes, among which was dividing the scientific work of the Society into three Sections, as follows: 1. Practice of medicine, materia medica and therapeutics. 2. Surgery, ophthalmology and otology, dermatology and venereal diseases. 3. Obstetrics, gynecology, and diseases of children.

The proposed changes and recommendations, after considerable discussion, were adopted section by section, and then as a whole.

The evening session was devoted to a discussion of the question, *What Shall We Do with our Insane?* Dr. E. Ingals, of Chicago, opened the subject by a brief paper. He was followed by Judge Prendergast, Dr. R. S. Dewey, Superintendent of the Kankakee Insane Asylum, Dr. Corbus, of the State Board of Charities, and Dr. Sanger Brown, of Chicago.

(*To be concluded.*)

Arrested for Practicing Illegally.—A young physician, recently graduated from the Missouri Medical College, has been arrested in St. Louis for practicing medicine without having registered. The child whom he had been treating unfortunately died, and this led to his detection.

ASSOCIATION NEWS.

American Medical Association.—Report of the Librarian.

Mr. President:—I have the honor to present the Catalogue of Additions to the Library of the Association, made during the period extending from May 1, 1888, to June 15, 1889.

The Catalogue shows that 122 distinct titles have been added to the Library, exclusive of Transactions of Societies, Reports of Boards of Health, Medical Journals and College Announcements not previously received and catalogued. The total additions amount to about 272 volumes, so that the Library at present consists of about 7,770 volumes, representing 2,972 titles.

I would respectfully suggest that the subscription to the *Index Medicus* for the current year be continued, and that the sum of $10 be appropriated to that end. Respectfully submitted,

C. H. A. Kleinschmidt, M.D.,
Librarian.

3045 H Street, Washington, D. C.

CATALOGUE OF ADDITIONS TO THE LIBRARY OF THE AMERICAN MEDICAL ASSOCIATION, BY DONATION, EXCHANGES AND SUBSCRIPTION, FROM MAY 1, 1888, TO JUNE 15, 1889.

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MISCELLANY.

NEW YORK PASTEUR INSTITUTE.—Dr. Paul Gibier, Director of the New York Pasteur Institute, submits the following statement for the month of April: During that month seven persons were treated at the Institute. In three of these cases hydrophobia was shown to have existed in the dogs by the inoculation of other animals with the nervous substance of the dogs who had bitten the patients. In the four other cases rabies was very probable, but the dogs had disappeared, or their carcasses had been thrown away instead of being sent to the Institute.[1] The patients were: Three from New Jersey, two from Illinois, one from Massachusetts, and one from Texas. The above patients are at present all enjoying good health, as also the thirteen patients inoculated during the month of March.

THE MCLEAN COUNTY (ILL.) MEDICAL SOCIETY met on the 5th inst., the President, Dr. F. J. Parkhurst, in the chair. Dr. Godfrey reported a case of necrosis of the superior maxillary bone, with specimen of the same. Dr. F. J. Parkhurst brought before the Society a man with necrosis of the skull in which the dura mater had been exposed for four years. Dr. Galloway presented a specimen of ovarian tumor. A large number of the members were present. Dr. F. J. Parkhurst gave his inaugural address, which the Society voted to have published in the *Pantagraph*. Dr. Little was tendered a vote of thanks for his excellent paper on the "Recent Epidemic Influenza." Much time was taken with the discussion of this paper, so that Dr. Maumee's essay was postponed to the next meeting. The Society adjourned to meet the first Monday in June.

[1] At the last moment we are informed that another person who was bitten by one of these dogs died with hydrophobia. This person had not been treated at the Institute.

HEALTH IN MICHIGAN.—For the month of April, 1890, compared with the preceding month, the reports indicate that puerperal fever, typho-malarial fever, inflammation of brain, membranous croup, diphtheria, cholera morbus and scarlet fever increased, and that pleuritis, typhoid fever and influenza decreased in prevalence.

Compared with the preceding month the temperature was much higher, the absolute humidity was more, the relative humidity was less, the day ozone and the night ozone were more.

Compared with the average for the month of April in the four years 1886–1889, cerebro-spinal meningitis, membranous croup, measles and inflammation of kidney were more prevalent, and typho-malarial fever, typhoid fever, cholera morbus, cholera infantum and intermittent fever were less prevalent in April, 1890.

For the month of April, 1890, compared with the average of corresponding months in the four years 1886–1889, the temperature was slightly higher, the absolute humidity and the relative humidity were slightly less, the day ozone was less and the night ozone was more.

Including reports by regular observers and others, diphtheria was reported present in Michigan, in the month of April, 1890, at 53 places, scarlet fever at 54 places, typhoid fever at 17 places, and measles at 96 places.

Reports from all sources show diphtheria reported at 8 places less, scarlet fever at 16 places less, typhoid fever at 8 places less, and measles at 15 places less in the month of April, 1890, than in the preceding month.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from May 2, 1890, to May 8, 1890.

By direction of the Secretary of War, First Lieut. Nathan S. Jarvis, Asst. Surgeon, is relieved from duty at Camp Wade, Kingfisher, Ind. Ter., to take effect on the expiration of his present leave of absence, and will report in person to the commanding officer, Ft. Verde, Ariz., for duty at that station. Par. 12, S. O. 102, A. G. O., May 1, 1890.

Major Richard S. Vickery, Surgeon, is granted leave of absence for twenty-one days, by direction of the Secretary of War. Par. 17, S. O. 103, A. G. O., May 2, 1890.

Official List of Changes in the Medical Corps of the U. S. Navy for the Week Ending May 10, 1890.

P. A. Surgeon E. H. Green, ordered to the receiving ship "Dale," Washington Navy Yard.

P. A. Surgeon Robert Whiting, detached from the "Dale" and to the nautical school ship "St. Mary's."

P. A. Surgeon H. M. Whitaker, detached from the "St. Mary's" and resigned, to take effect November 5, 1890.

Surgeon J. W. Ross, ordered to the Navy Yard, Pensacola, Fla.

Surgeon J. M. Flint, appointed a delegate to represent the Medical Department of the Navy at the Pharmacopœia Convention to be held in Washington May 7.

Medical Director R. C. Dean and Medical Inspector Theoron Woolverton, appointed delegates to the American Medical Association convention to be held at Nashville, Tenn., May 20, 1890.